

A-GPRS1090I

User's Manual



Beijing ART Technology Development Co., Ltd.



A-GPRS1090I User's Manual

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Chapter 1 Introduction

Overview

General Packet Radio Service GPRS is one kind of recent wireless data transmission service which develops on the existing GSM system. GPRS theoretical bandwidth may reach up 171.2Kbit/s, the practical application of bandwidth probably in 40~100Kbit/s, provides TCP / IP connection in this channel, may be used for Internet connection and data transmission applications. GPRS uses packet switching technology, so each user can simultaneously occupy a number of wireless channels, the same radio channel can be shared by multiple users, and resources are used efficiently.

GPRS allows user to transmit and receive data under end-to-end packet transfer mode, without requiring the use of circuit conversion mode of network resources. GPRS is online forever, according to the flow of billing, thus providing an efficient, low-cost wireless packet data business. It's especially suitable for intermittent, sudden and frequent, with many points scattered, small and medium-sized flow of data transmission, but is also suitable for the occasional a mass of data transmission. Wireless data communications system is based on the 2.5G communications network platform to provide users for being online forever, transparent data transmission's virtual special-purpose data communication network..

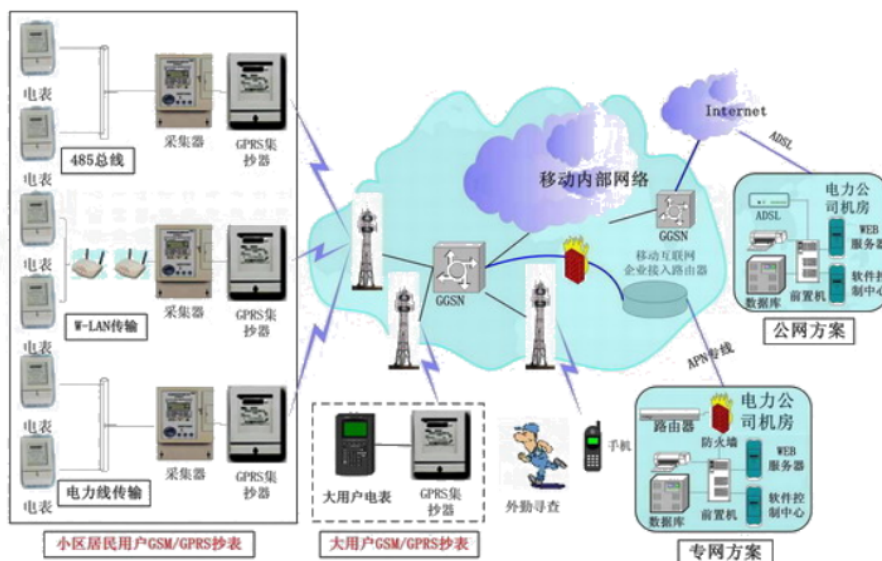
Operating system support

The operational under most popular operating systems such as windowsxp/2000/2003/Vista etc. however, ART device drivers provide easier installation, configuration and better performance for windowsXP, windows2000/2003, Vista,. Please refer to the respective operating system's manual for how to install and configure the standard driver.

Wide applications

A-GPRS1090I module has a wide range of applications, following are some typical applications:

- 1 power down automatically Meter System
- 2 Environment Monitoring System
- 3 urban street lamps lighting system
- 4 Industrial Automation Control System





this picture is the application of power down automatically Meter System

Features

- Support Dual-band GSM/GPRS;
- Transparent Data transmission: In the module inlays the intact TCP/IP protocol stack, provides the RS-232/485 COM port, and provides the transparent transmission channel for user's data equipment;
- Support dynamic domain name of data center or visit by IP address;
- Data Terminal Supports three methods of work, they are online forever, idle winding, and idle power-down;
- Support the function that can be wakening up by message and telephone;
- Support the function of automatic connection if it is disconnection;
- Support local and long-distance graphical interface to configure and the maintenance;
- Supply power source, connection status, and the operation indicator light;
- The multiple software and hardware are designed reliably, and the watchdog technology makes the equipment be operated safely;
- Supply single voltage from +7 V to +26 V (+9 V ~ +12 V);
- The biggest working current is 300mA, and the dormancy time $\leq 10\text{mA}$;
- Operate temperature: $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$;
- Operate humidity: 90%.

A-GPRS1090I's diagram is as follow:



Check List

Unpack the A-GPRS1090I series package, you should find the following items:

- 1 A-GPRS1090I data transmission module;

2 device driver diskettes:

- a) Driver;
- b) User's manual (this manual).

3 A straight line with 9 cores in view of holes.

4 power.

Installation Guide

Methods about how to install A-GPRS1090I in different operating systems are the same, our company provides a CD-ROM that contains the installation program “Setup.exe”, and users double-click the installation program, then through the prompting of the interface to complete the installation.

Chapter 2 Parameter configuration

We have three ways to configure parameters of A-GPRS1090I: these are local COM port configuration, long-distance configuration and message configuration.

Local COM port configuration mode

Local COM port configuration uses A-GPRS_Config.exe or AT command.

There are two ways can enter local configuration mode, as follow states.

1 Give the power to DTU: when give the power to DTU, it will check whether COM port is appearing blank space; if appearing blank space, it will consider that the user requires entering the configuration mode. So first we only need send blank space to COM port before give the power to DTU, second , we must give DTU the power quickly, then we can enter the configuration mode.

Note: If it receives character “e” when give the power to DTU, it will rest DTU; if it receives character “a”, we can do AT mandate for SIM300.

2 DTU is working regularly: when DTU is working regularly, we can send characters in table 2.1 to DTU by COM port, to make DTU exit present work mode, enter the configuration mode.

Table2.1

Pre-idle time	Character	Idle interval time
Least 100ms	+++ is set \r\n	Least 100ms

Figure 2.1 Input data transmission

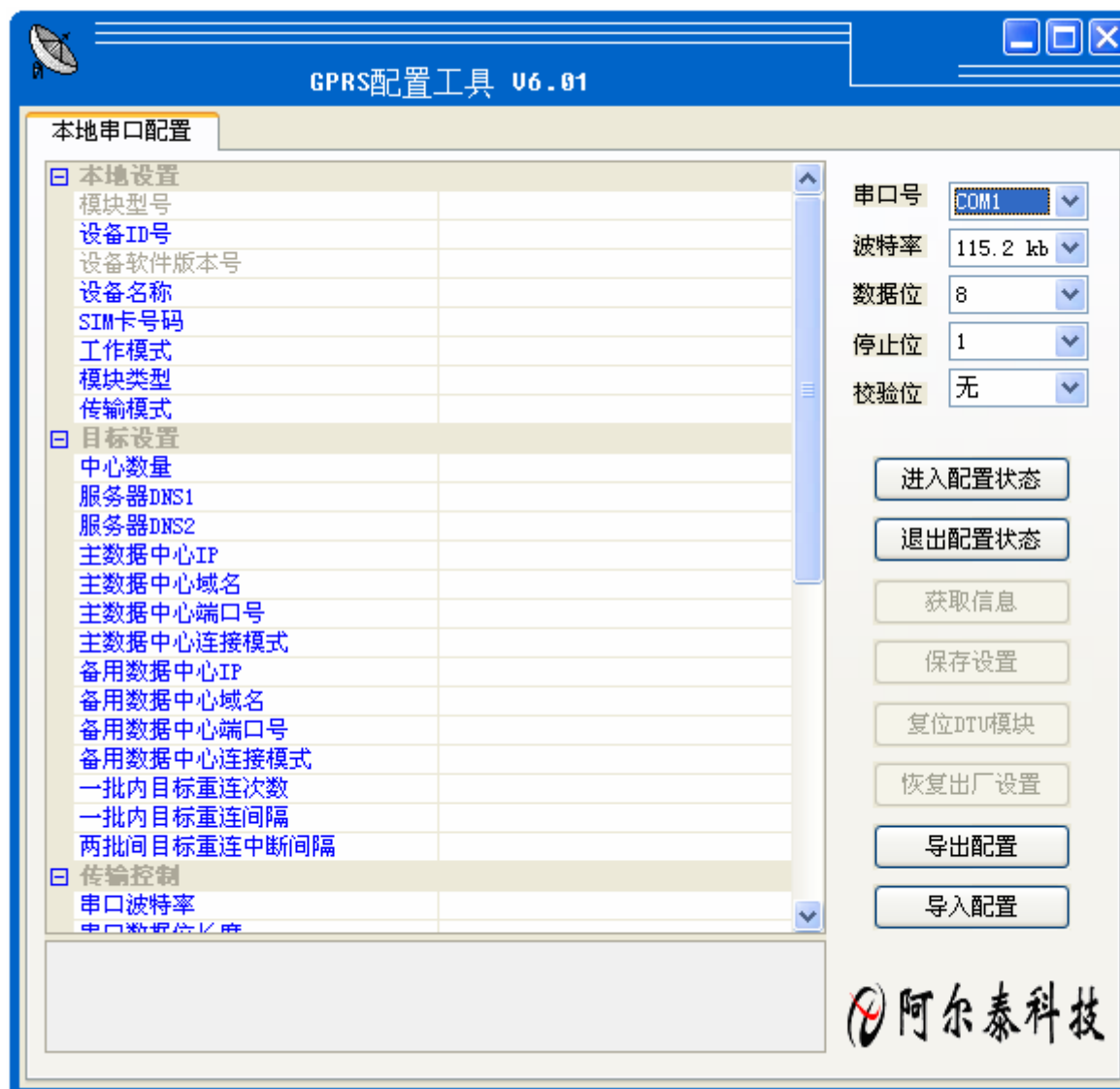


GPRS-Config.exe configuration program

The way of A-GPRS1090I enters to the configuration mode: (first do not give the power to mode)

1 Connect the COM port with the mode.

2 Click the “enter configuration status” button, and then give power to A-GPRS1090I quickly. (Show as figure)



3 Click the “get information” button, then we can read the information of mode, or we can wait for seconds because it can get information voluntarily.

4 In the left of user interface, there is a “local COM port configuration” tool, we can change the information in it, when has been changed, we can save new information by clicking the “save configuration” button.

AT parameter configuration protocol

After DTU had entered the configuration mode, accordingly we can send command frames with configuration message, by command frames we can read or write parameters. Command frames all use ASCII characters. This not only gives the user convenient to use hyper terminal for parameter configuration in absence of configuration tool, but also allows user to write the program of DTU configuration easily in his own device. Command frame structures are shown in Table 2.1.4-1. There are two categories of command, writing commands and reading commands. Writing commands are used to configuration parameters of DTU, reading commands are used to query the current configuration of DTU. The difference between them is that reading commands do not have configuration parameters and characters after the command are different. “=” stands for writing command, means to evaluation. “?” sands for reading command, means to inquiry.

Command codes are different because the configuration objects are different, but these codes must comply with requirements of regulations (show as Table 1.3). If using other command codes, DTU will return “ERR CMD”, for



another way, if writing command with parameter configuration is not illegality (for example the baud rate has surpassed the scope of requirement), then DTU will refuse to receive this parameter and return “ERRDATA”.

Note:

1 The data in command frame is all ASCII characters, and all inputted characters do not be divided the big or small letter;

2 Command codes can be found in Table 2.1.4-2;

3 Writing command frames' length can be found in Table 2.1.4-2.

Table2.1.4-1

Command Frame Type		Format
Writing Command		AT+ command code=parameter
Writing Response	Right	OK\r\n
	Command mistake	ERR CMD\r\n
	Parameter mistake	ERR DATA\r\n
Reading command		AT+ Command Code?\r\n
Reading Response		Command code =Parameter\r\n

Table2.1.4-2

Function name		type	code	Maximum length	Settings
Local settings	Module type	R	DTUTYPE	10	Such as ART1090
	Device ID	R	DTUID	15	unique ID, can not change
	Software version	R	SWVER	5	Such as V1.00
	Device name	RW	DTUNAME	15	Such as ARTDTU01
	SIM number	RW	PHON	11	Such as 15810437433
	Mode	RW	MODE	1	0 : online forever1 : idle winding2: idle power-down
	Mode type	RW	DTUMODE	1	0: client, 1: server, 2: CSD client, 3: CSD server
	Transport Mode	RW	DATMODE	1	0: agreement transmission, 1: transparent transmission
Goal Settings	Center number	RW	SVRCNT	1	1~2

	DNS1	RW	DNS1IP	15	Such as 202.106.0.20
	DNS2	RW	DNS2IP	15	Such as 211.136.17.107
	Main data IP	RW	SVRIP	15	Such as 221.218.157.55
	Main data center domain	RW	SVRNAME	40	Such as "www.sohu.com"
	Main data center port	RW	SVRPORT	5	Such as 80
	Main data center mode	RW	SVRMODE	1	0: TCP connection 1: UDP connection
	Backup data center IP	RW	SVR1IP	15	Such as 192.168.0.1
	Backup data center domain	RW	SVR1NAME	40	Such as "www.163.com"
	Backup data center port	RW	SVR1PORT	5	Such as 80
	Backup data center mode	RW	SVR1MODE	1	0: TCP connection 1: UDP connection
	The number of reconnection	RW	TRYCNT	2	1~99
	The number of reconnection interval	RW	TRYTIM	5	10~65534s
	Two groups of interrupt interval	RW	TRYSPACE	5	1~65534m
Control transmission	Serial band rate	RW	SERBAUD	6	300~115200
	Length of data bit	RW	SERDAT	1	5~8
	Length of stopping data bit	RW	SERSTP	1	1~2
	Check the type of serial	RW	SERCHK	4	
	Heartbeat packet interval	RW	BEATTIM	5	30~65534s



	Heartbeat packet timeout	RW	BEATOUT	5	30~65534s
	Heartbeat packet data settings	RW	BEATDATA	2	One byte of Hex, such as: FE
	Frame interval	RW	SERS	5	1~65534ms
	Maximum length packet	RW	MTU	4	1~1024 byte
	Idle line time	RW	IDLETIM	5	30~65534ms
Network parameters	APN	RW	APN	20	Default empty
	APN users' name	RW	USRNAME	20	Default empty
	APN password	RW	PWD	20	Default empty
	Message center number	RW	SMSNO	14	Default empty
	Local port number	RW	LCOPORT	1	Default "2020"
	Message authentication users 1	RW	USERNO1	14	
	Message authentication users 2	RW	USERNO2	14	
	Message authentication users 3	RW	USERNO3	14	
	Module lands password	RW	DTUPWD	6	Default "888888"
Control command	Reset the current firmware	W	RSTDTU	2	ON: putout

Restore the factory settings	W	DEFAULT	2	ON: enable
List of all system configuration parameters	R	CFGLIST		
Save current parameters	W	CFGSAVE	2	ON: putout
Debugging information output	RW	DBGINF	3	ON: have; OFF: no

Long-distance configuration

Long-distance configuration uses ARTServe, show as figure:

以太网远程配置

发送框

命令: AT+CFGLIST

只读: ☒

参数:

说明: 读取所有命令及命令值，只读。

串号：960574429151753
设备名称：DTU109X-2
IP地址：

发送 清空

接收框

确定 取消



Message configuration

Message configuration uses telephone to send commands in order to configure.

Note:

One message only can send one command, format is that: six numbers' secret code + “:” + command (need not add “AT +”). All characters use Spanish. Not only the telephone number is the same as certification number, but also the secret code has been passed, then the message configuration can work. “WAKEUP” of message commands can wakes up the DTU.

Message configuration supports the waking up function of telephone call: telephone call's time must over two rings , then after rang off it can be woken up.

Chapter 3 Instruction of function configuration

Lead out configuration

It can save the information which had been changed.

Lead in configuration

It can on-load the information that you have saved before.

Rest the DTU mode

When use it; the mode will carry out software rest.

Restore factory settings

When use it, the mode will carry out restoring the factory settings.

DTUTYPE

DTUTYPE is the product device number, makes up with ten ASCII characters. This parameter only can be read, it has been set up by the factory, so users can not change it.

DTUID

DTUID is the unique serial number, by this unique serial number, ARTServer can distinguish the module which has connected. This unique serial number makes up with eight ASCII characters; users can change it to any meaningful value.

SWVER

SWVER reflects the information about software version, it has been set up by the factory, so users can not change it. It can supply more useful recommendations when users need technical support.

DTUNAM

It can distinguish different devices when multiple modules are being used. DTUNAM makes up with 15 characters.

PHON

This parameter need be configured by userself, it is not a parameter of system, so it will not affect the module operating status. Server-side uses it to read mobile phone number, it makes up with 11 ASCII characters, such as "15810437433".

MODE



There are three modes of A-GPRS1090I to work: “online forever”, “idle winding”, “idle power-down”.

- Online forever: Mode will connect to the server which has been set when give module the power, then the data can be transmitted at any time.
- Idle winding: Mode will connect to the server which has been set when give module the power, the module will disconnect with server if there isn't any data be transmitted in a time, then enters to the sleeping mode. Communication idle time can be configured by using "idle time line (IDLETIM)" command of the "transmission control", the shortest time is 30 seconds, the longest time is 65,536 seconds, stepping is a second. If the module disconnects with the server, there are three ways to enable re-establish connection between the module and the server.

The first one is that we send the data to module serial port; the module will send these data after it has connected to the server successfully.

The second is that it is woke up by telephone call, the telephone number is the same as the SIM card number, as long as user calls this number to connect, until the tone ring is more than 2 to hand up initiatively, then the mode will re-establish a connection between the server, in other words, the equipment is woke up.

The third is that it is waked up by message. Users write the number which can wake up the module in any “message authenticated users”, the number format is “+861 *****”. Message command format is 888888: Wakeup.

Sending message after the connection is successful, it will return back a message, the message content is “OK”, then a successful connection between the server and the mode is re-established, the equipment is woke up.

- Idle power-down: idle power-down and idle winding's work mode are similar, the difference between them is that if module works in the idle power-down, once it disconnects from the server, it will cut off the power that be supplied to the GPRS module, and the entire system enters the power-down state, achieve low-power purposes. When system in the power-down state, the whole power consumption is less than 14mA, is suitable for battery-powered and intermittent communication occasions.

In the "idle power-down" mode, there is only one way to establish a connection between the module and the server (wake up module equipment), to send data to the module serial port, the module will connect to a server device after the data is sent successfully.

DTUMODE

This parameter is used to set module function mode, when DTUMODE is configured to "CLIENT", the module will serve as the client to connect the data center server initiatively. When DTUMODE is configured to "SERVER", the module will serve as a server waiting for the client to connect. In the peer-to-peer functionality, one module will be configured as "SERVER", the other is configured as "CLIENT".

SVRIP, SVRNAM, SVRPORT, CNTMODE

A target server configuration includes IP address and port number, if the server does not have a fixed IP address, you can use the domain name. When the server IP address is validity, the domain name will be ignored. In communication network, it has TCP and UDP communication. TCP communication which is based on the connection method of communication, one communication is the server; the other party is the client. In the initial state, the state of the server is listening, waiting for the client to connect; however the client will need to take the connection to a server initiatively, in practical application, data centers are usually used as the server mode, while the module is usually the client mode. In TCP communication, any party after receives each other's data packets must be carried out the response, so this approach has the advantage of reliable communication, but communication speed will be slower than UDP mode. UDP is not

based on connection method of communication, the two communication sides are equal, either part after receives each other's data packets need not response. Because the communication process is simplify, so speed of UDP communication is faster, however stability and data reliability are not better than TCP communication.

When using TCP to establish connection, the module servers as a TCP client, data center server as a TCP server, under this mode, module has landed data center server can exchange data ; while in DTU communication, it does not exist above relationship , module and data center must establish a UDP connection. Because the module in the mobile operator network, so the public network (Internet) on the network equipment can not communicate the module direct lily, in such circumstances, only the module takes the initiative to connect public network equipment, when module uses UDP mode to send data to the data center, data packets will carry the IP address and port number information, after data center receives packets, it can establish a new connection between module and UDP according to this information , when establishment is successful, two sides can exchange data . However, because UDP mode in GPRS environment is instability, easy losses packets, so I do not recommend using UDP mode.

SVR1IP1, SVR1NAM1, SVR1PORT1, CNTMODE1

A target server configuration includes IP address and port number, if the server does not have a fixed IP address, you can use the domain name. When the server's IP address validity, the domain name will be ignored. If it is failure after several attempts to connect the main central server, the module will automatically switch to connect the backup center server. When use backup server, if the long- distance configuration connection suddenly disconnected, the module will re-connect the backup server. If it is working when the connection suddenly disconnected, the target server will switch back to the main central server.

TRYCNT, TRYTIM, TRYSPAC

In order to increase the security of data center, it will send a packet which is referred to "Registration packets" when the module lands on the target server. Registration packets contain parameters, if user software finds the secret code is wrong, it can refuse equipment to land. Secret code can be set to any 8-byte characters.

The number of the same goal's connecting which in the same group connection, is controlled by the number of target re-connected. "0" stands for regardless of batch when establishes connection (parameters of connection interruption interval is invalid). The interval of target connection is used to control the time between two connections, the smallest time is 10s, and the longest time is 65.5536s. The interruption interval of target connection is used to control the time of two groups' connections, the smallest is one minute, and the longest is 65,534 minutes.

For example, assume that now configure the number of re-connection is 5 times, re-connection interval is 200s, the disruption of re-connection interval is 10 minutes, the IP of the main data center, the back-up data center and port number are set. Then the module will first try to connect the main data center, if the connection is fail, it will be in 200s interval to attempt to connect the main data center, until five opportunities are used up. Next, the module will delay 200s to switch the target server, after that it will try to connect the back-up center, if the connection is fail also, it will attempt to connect the back-up center in 200 seconds interval, until five opportunities was run out. So far, a number of connections are end, the module into the delay of "Connection interrupted interval", after delays 10 minutes it will repeat the process to start the next batch of connection attempt. Until the modules connect to the server successfully.

SERBAUD

This parameter controls the module serial's communication baud-rate, you must use the standard baud-rate for communication, and baud-rates are supported as shown in Table 3. 13.

Table3. 13 Support baud-rates

Standard baud-rate									
300	600	1200	2400	4800	9600	19200	38400	57600	115200

SERDAT, SERSTP

These parameters control the format of the serial's data and characters, users can change these parameters according to requirements of their own devices.

SERCHK

This parameter controls the serial's checking types at the time of communicating, the relationship between values and checking types are shown in Table 3. 15.

Table3. 15 relationship between values and checking types

Baud-rate	No checking	Odd checking	Even checking	Compulsory to 1	Compulsory to 0
Set value	NON	ODD	EVEN	1	0

BEATTIM

Module has connected to the server, if did not produce data streams for a long time, this connection will be cut off by operators. In order to maintain connections actively, the module will be intermittent to send one meaningless byte to the server; this data is known as the heartbeat packet. The time between two heartbeat packets can be set according to the local network, usually is tens of seconds.

Users can set heartbeat packet interval time through this parameter, it is from 30s to 65, 534s.

BEATDATA

We can also set the heartbeat data by ourselves, such as: "0x3F", using the AT command to configure, format is: "AT + BEATDAT = 3F".

SERS, MTU

If in the time of frame interval did not receive new data, the serial would receive a byte data. then the byte before serial data is as a packet, the next byte of data is as the next packet starting. If users have requirements of data frame transmission, you can use the sub-Ways.

In the GPRS network too large packets will increase the transmission delay, and easily lost data, so users would be according to the local network to set up a reasonable maximum length packet. When receives data packet which reaches the maximum, the module will sent them as a data packet, these movements for users is transparent (can be said to be hidden also).

Note: If the "time frame" or "maximum length packet" is set too small, the network packet issued by users will be lowered, and will result traffic in increased. If it is set too large, it will lead to sent packets become large (no more than "the largest packet length" value), propagation delay will also be increased. Users can grasp specific parameters, if the data need not sub-frame, suggest "time frame" is set to hundreds of milliseconds (default is 100ms), and "the largest packet length," is set to a few hundred bytes (default is 512 characters).

IDLETIM

Please see the note of "2.2.6 mode" section.

APN, USRNAM, PWD

These parameters can be used by default. If you use a dedicated VPN card, then these parameters can be set according to the actual situation.

LCOPORT

This parameter is used to set module as "SERVER". When use point-to-point connection, there will be a module serves as a server, another is client, they will establish TCP or UDP connection.

DTUPWD

When user is authorized to use message configuration module, must send the right secret code, otherwise it will be impossible to configure. The length of the parameter is 6 characters.

DBGINF

This parameter controls whether the data input is "echo" and whether there are "debug information" outputs.

"Echo": When you use HyperTerminal tools to configure module, HyperTerminal does not show the data that you enter into the HyperTerminal, it requires module to receive back data from the serial port, in this way it can display the content that you put in the HyperTerminal. If you use single-chip or other devices to configure the module automatically, the echo function will be un-useful; then you can turn it off.

"Debug information": in order to give the users convenient to observe the work of module when they debug module at the scene, the module will print out equipment information from the local serial port, such as the information of connecting server. After the end of debugging system, debugging information is useless, you can turn it off.

Chapter 4 Server program

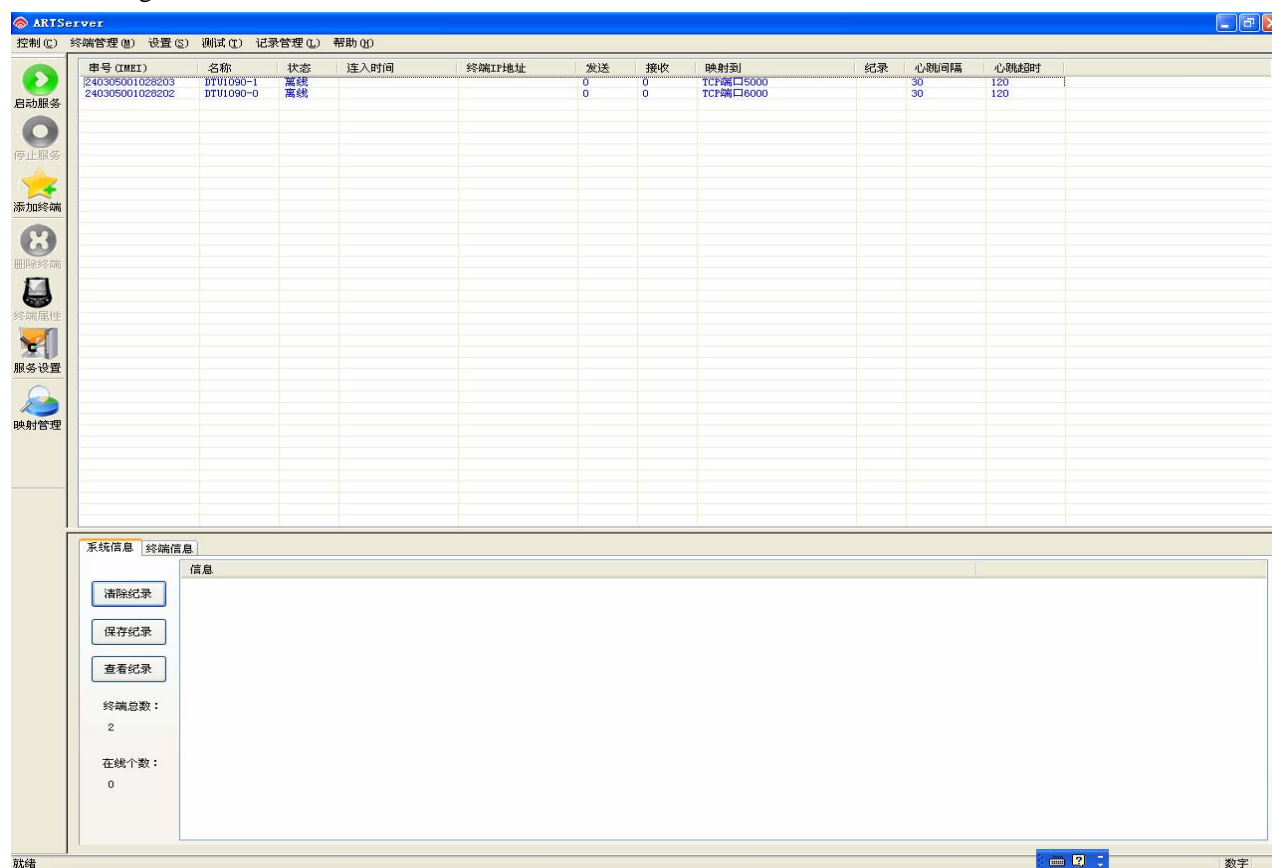
Overview

ARTServer is a wireless communication server application which is running on Windows operating systems. A-GPRS1090I module is supplied by our company ,it can transmits communication between module and server, client connections ,management, client mapping, data transmission and other functions can be realized by the server.

Usage Instructions

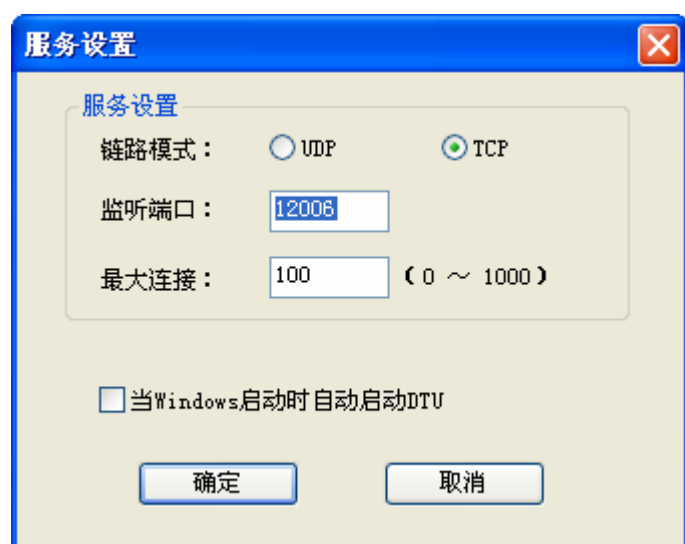
Application framework

show as figure:



Server Settings

show as figure:



服务设置

服务设置

链路模式： ☐ UDP ☒ TCP

监听端口：

最大连接： (0 ~ 1000)

☐ 当Windows启动时自动启动DTU

确定 取消


Instruction:

1) Defaulting monitor port is 8000; the server program allows only one monitor port to the outside world, allowing 1000 clients to establish connection at the same time.

2) Users can also select "When Windows starts activated A-GPRS automatically ", then when users open the computer, ARTServer will be activated automatically.

Add terminal

Wireless module through name and IMEI which is the unique identifier of module can be added in the server program of ARTServer, show as figure:



添加终端

串号 (IMEI)

名称

☒ 终端存在

☐ Server指定心跳参数

心跳间隔： (30 ~ 300) 秒

心跳时间： (80 ~ 900) 秒

加入 取消

Instruction:

1 IMEI must be 15 bits.

2 "Terminal existence": If you do not choose the "Terminal existence", it will be an invalid terminal, ARTServer does not accept the connection request from terminal.

3 "Heartbeat interval" refers to the time of sending a terminal heart to ARTServer.

"Heartbeat overtime" means the terminal does not receive the heartbeat packets from ARTSever for seconds, and



then it will think the module has been dropped. After has dropped the terminal it will determine next connection according to their own "try spacing" parameter. Heartbeat parameters ensure the terminal on line; the value can be set by users.

Delete terminal

Click the list box to delete the terminal, select the menu "Terminal Management | delete Terminal" or click the toolbar "terminal delete" button, pop-up dialog box to confirm the deletion. Clicks "Yes" while the terminal deleted.

Mapping management

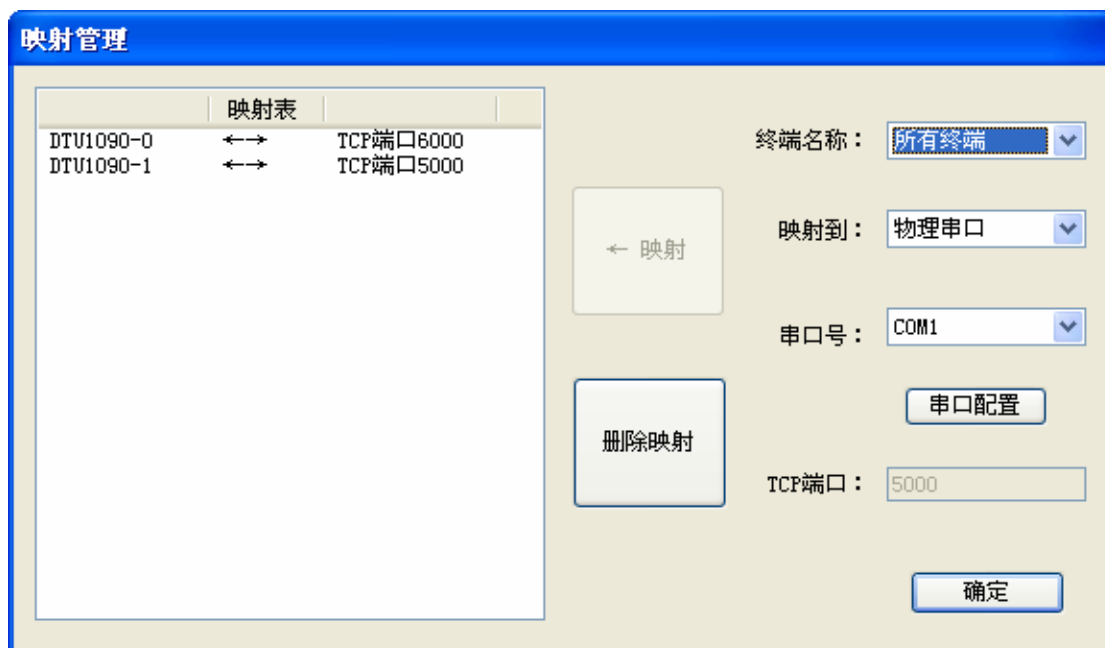
ARTServer supports four mapping methods: end-to-end, end-to-local physical serial port, terminal to the local virtual serial port, terminal to the local TCP port.

1 End-to-end mapping: two terminals exchange the data by ARTServer.

2 Terminal to the local physical serial mapping: ARTServer opens a designated and actual serial port, then between terminals and the serial can transmit data.

3 Terminal to the local virtual serial port mapping: ARTServer creates a virtual serial port, and then between virtual serial port and terminals can transmit data.

4 Terminal to the local TCP port mapping: ARTServer opens a local server port, and then between terminals and the TCP port can transmit data. Show as figure:



Instruction:

- 1 terminal own should not map, when map a number of TCP ports, TCP port numbers should not the same.
- 2 Make sure that no program is opening the virtual serial port when we want to delete the virtual serial port.
- 3 If you want to delete the mapping, please click the "Mapping" to remove the one which you want to delete, and then click the "delete mapping" option.

Information

ARTServer has "system information" and "terminal information".

- 1 "System information" has the information of terminals.
- 2 "terminal information" shows terminal connection status, heart rate, receive and send data.

系统信息

终端信息

清除纪录

保存纪录

查看纪录

终端总数：

2

在线个数：

0

信息

2007-12-25 8:44:41启动虚拟串口映射成功，串口号：2
2007-12-25 8:44:44启动成功
2007-12-25 8:44:44服务器监听端口：8000，允许最大连接数：100
2007-12-25 8:44:58关闭服务器监听端口：8000
2007-12-25 8:44:58关闭所有虚拟串口映射
2007-12-25 8:44:58关闭服务器监听端口：8000
2007-12-25 8:45:5启动成功
2007-12-25 8:45:5服务器监听端口：8000，允许最大连接数：100

Chapter 5 Application Introduction

Agreement transmission

Configuration Settings

1 First of all, set the "transfer mode" to "transfer agreement."

2 DNS of "Server DNS1" and "server DNS2" has been set, you can not change it. (Factory default settings are: DNS1 = 211.136.17.107, DNS2 = 202.106.0.20).

3 "Master data center IP" uses the public IP network; so that the module is able to connect to IP address (if you use the "main data center domain name" then the current item must be empty). Following figure:

Note: the public network IP address changes every day, so it needs to be updated.

4 "Main data center domain name," you can use software to application a domain name, by a third party to manage the domain name, it is more convenient for user.

Note: The "main data center IP" must be set to empty when we use the domain name to connect.

5 "The port number of main data center ": The computer is Using "ARTServer.exe" applications required opening a port number and the port number is set in the current item.

6 "Master data center mode" selects TCP mode.

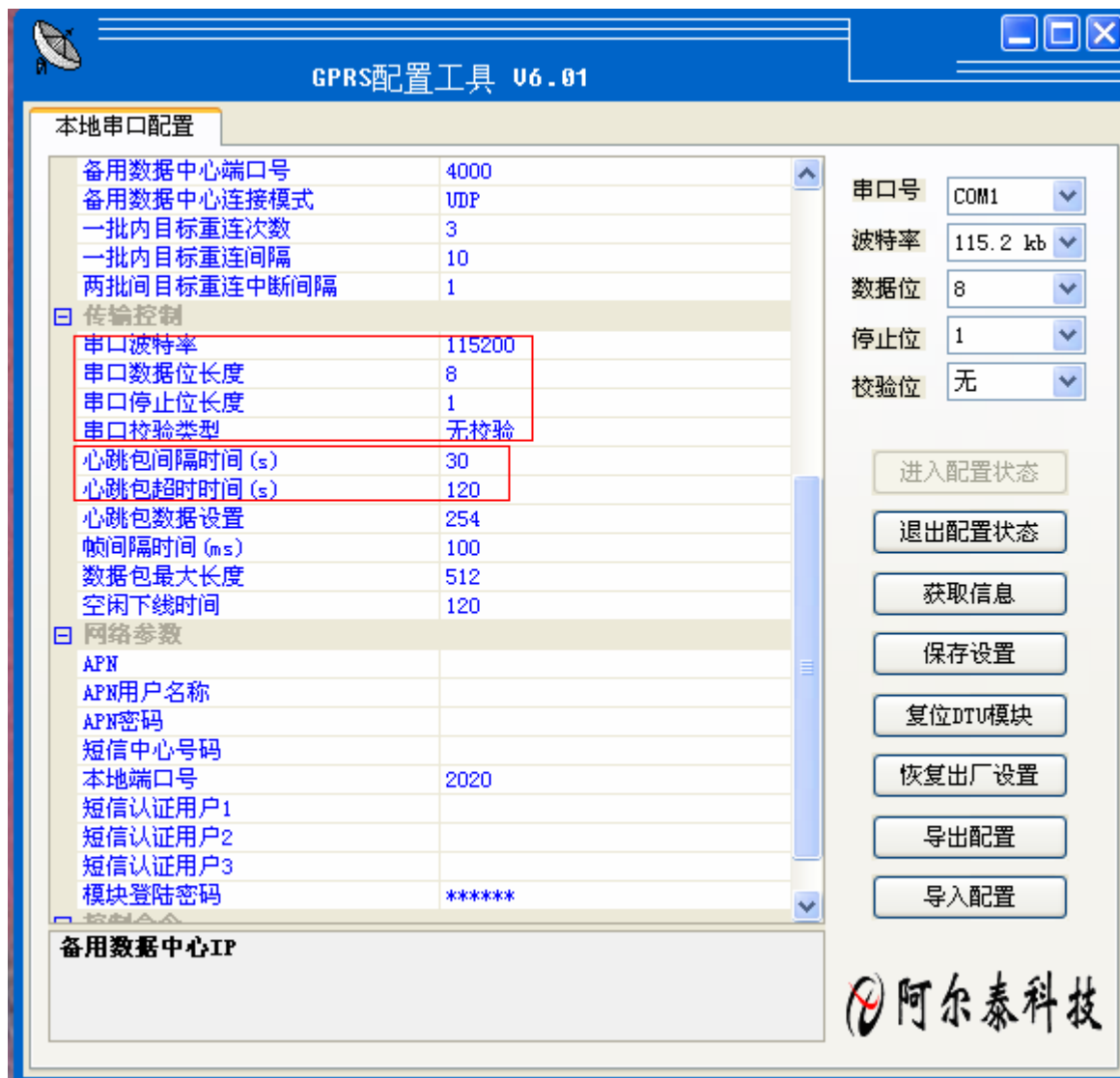


7 Serial port settings: A-GPRS1090I itself provides a serial port to transfer data; serial port configuration is shown below.

8 Heart rate settings:

"The interval time of heartbeat packet": it will send a heartbeat in a certain time, the default value is "30s", and you can change it in the procedure.

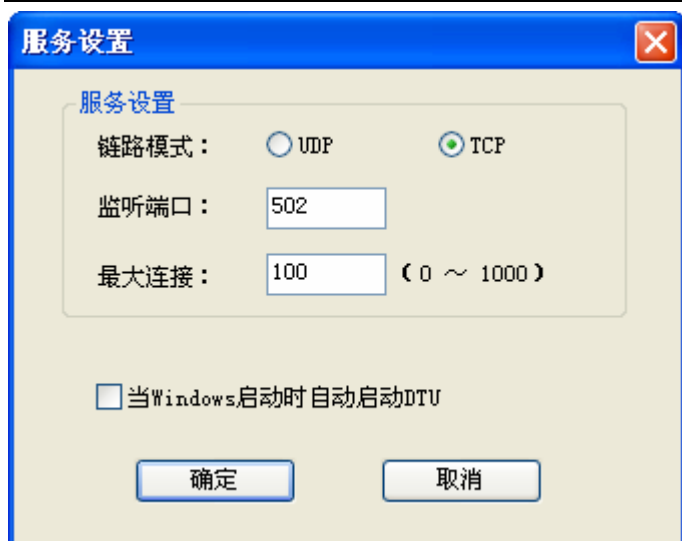
"The timeout of heartbeat packet": the module will re-connect in overtime if there is no heartbeat. The default value is "120s", and you can change it in the procedure.



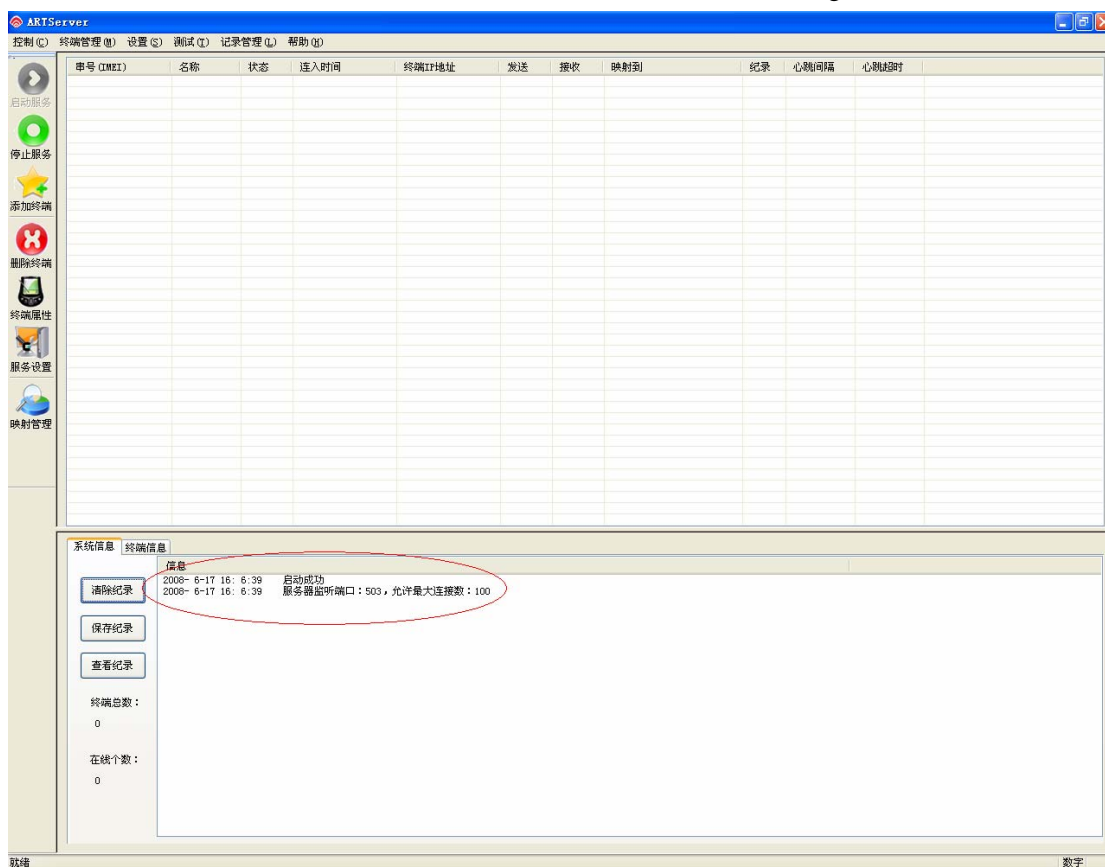
ARTServer server program

Start menu \ program \ ART Monitoring Demonstration System \ A-GPRS1090I \ ARTServer Service procedure

1 Click the left "Service Setting" button to set the main server port number (the port number should be the same as the "main data center port number"), show as follow:

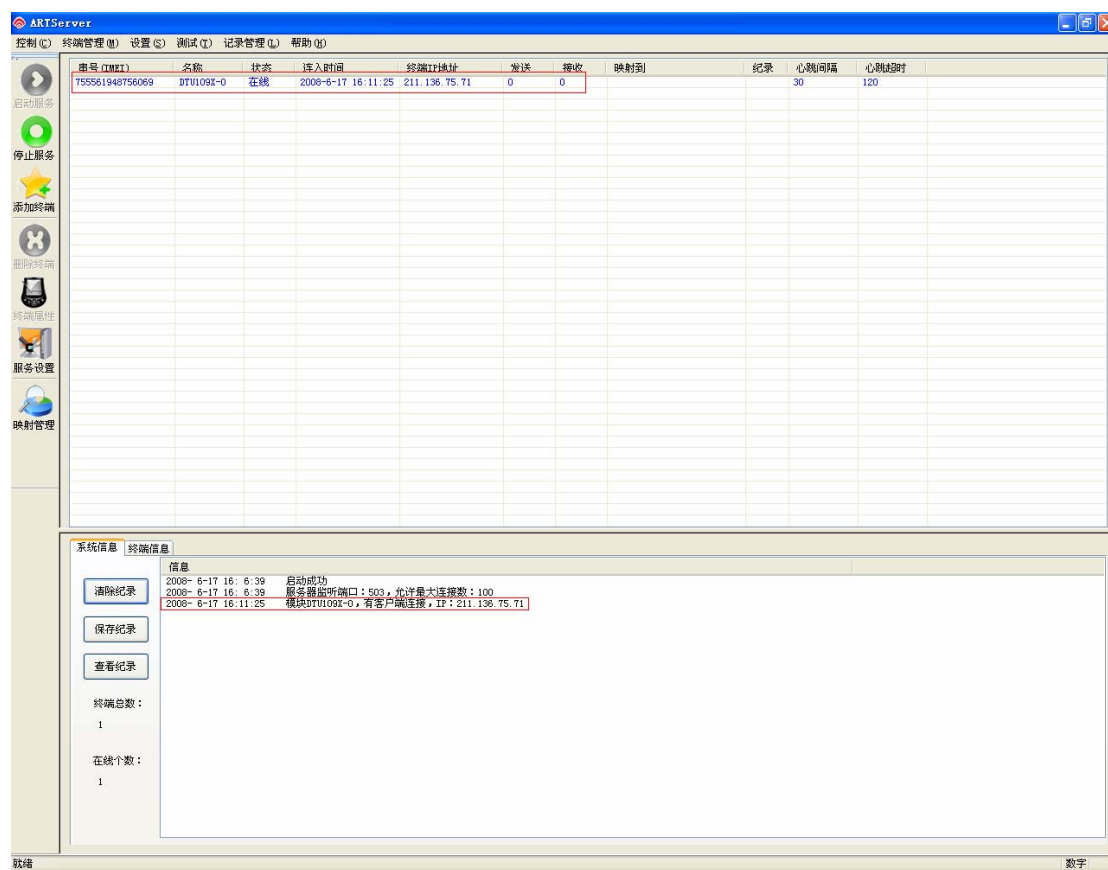


2 click the "Start Service" button to create a master server. Show as the figure:



3 give the power to A-GPRS1090I module, (please insert the M-Zone card which has been opened GPRS business to the module).Then waiting for the module to connect the server.

After tens of seconds, the module connects the server successfully, show as below:

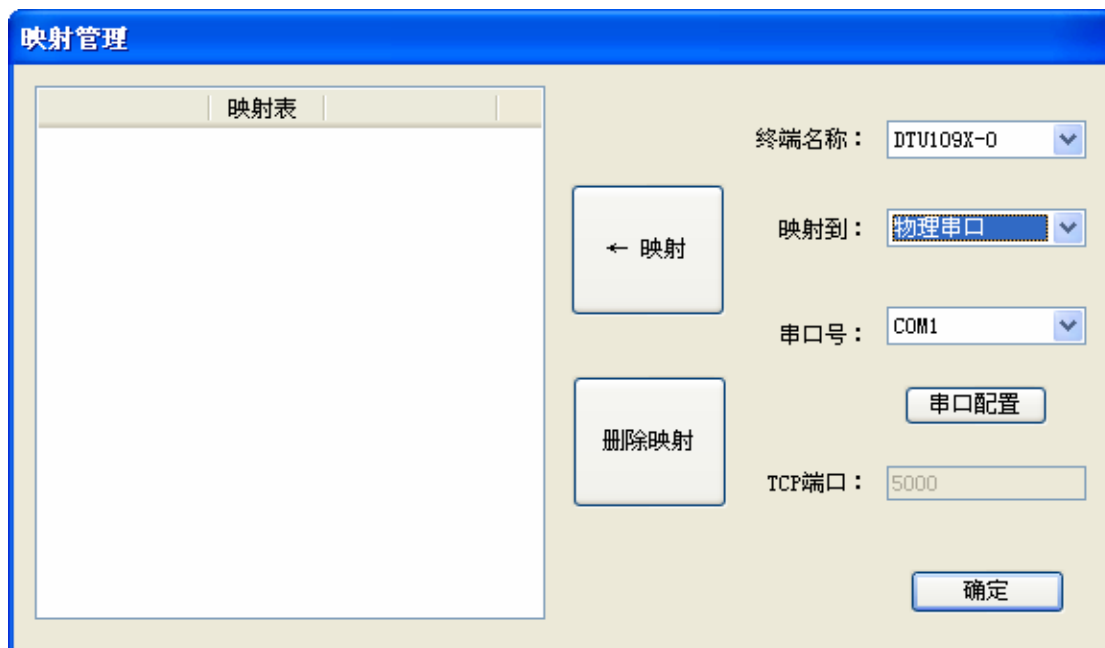


4 The server program is main to realize transmission data, and it can achieve physical serial port forwarding, TCP port forwarding, virtual serial port forwarding.

(1) First precede "physical serial port forwarding" test



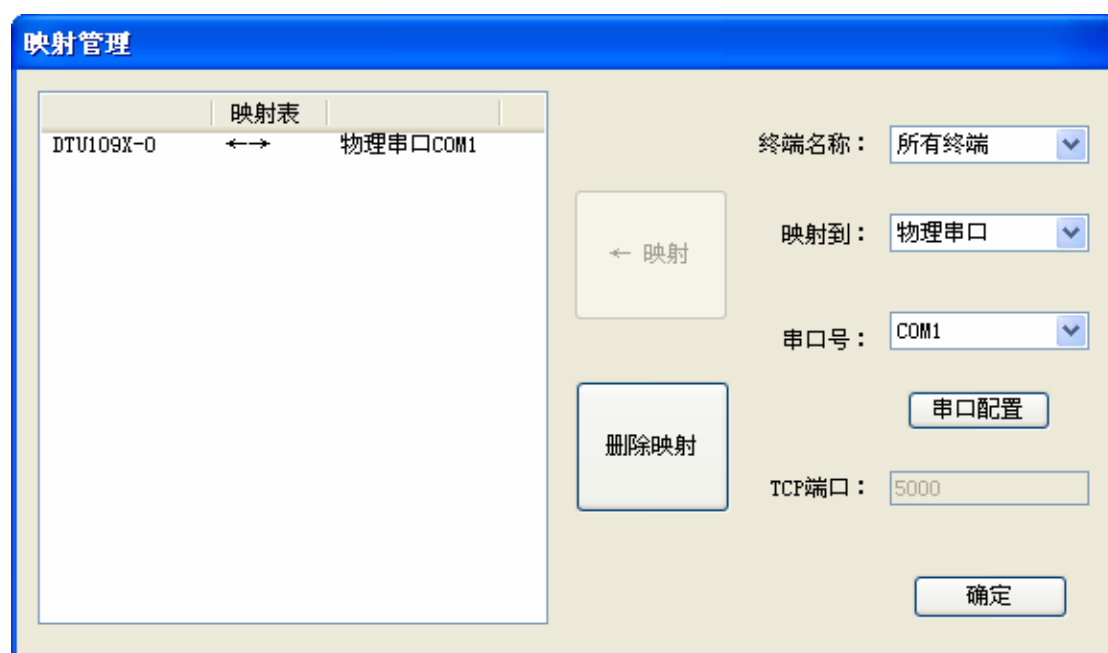
Click the left "Mapping management" button, it will pop-up dialog box.



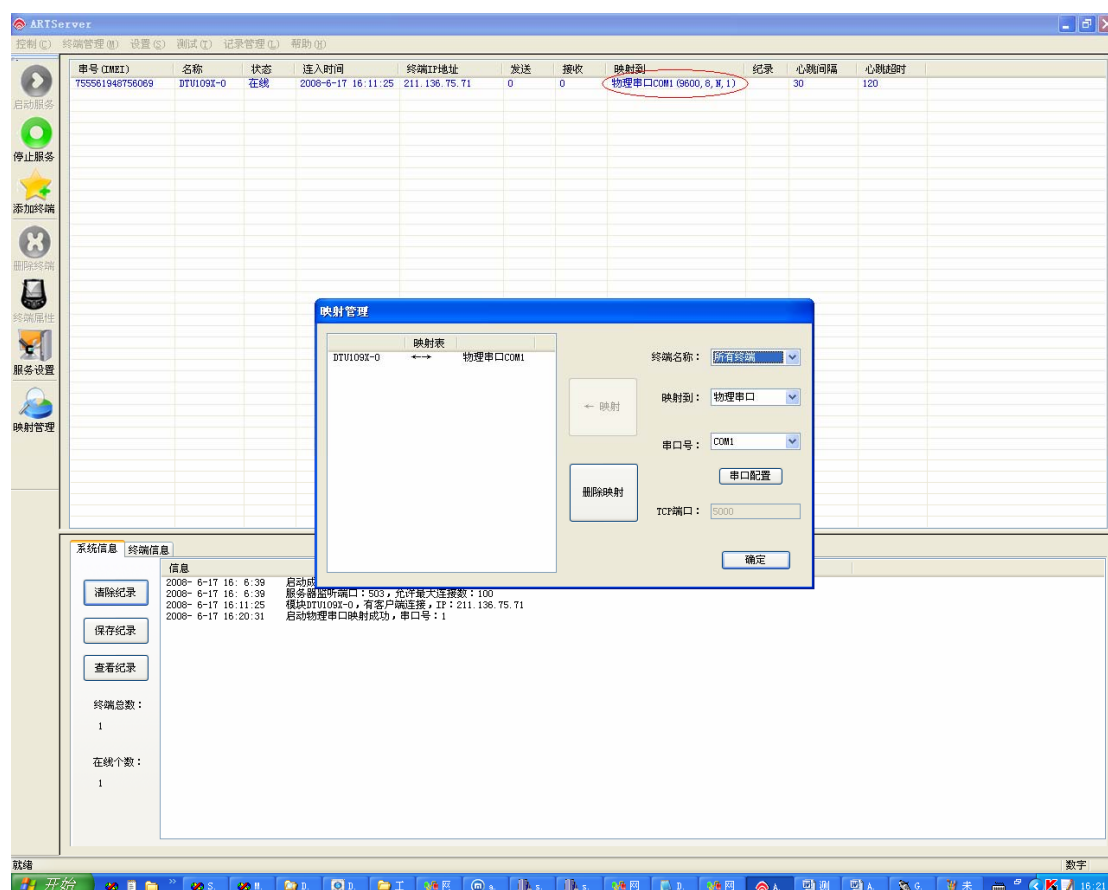
Map the DTU1090-0 which is new connection device to the physical serial port, serial number is COM1.
Click the serial configuration dialog box, show as follows: to configure serial. (Only after configured the serial port, then the "mapping" button is valid)



Click the "mapping" button, show as follows:



Then master service will add the physical serial port forwarding function:

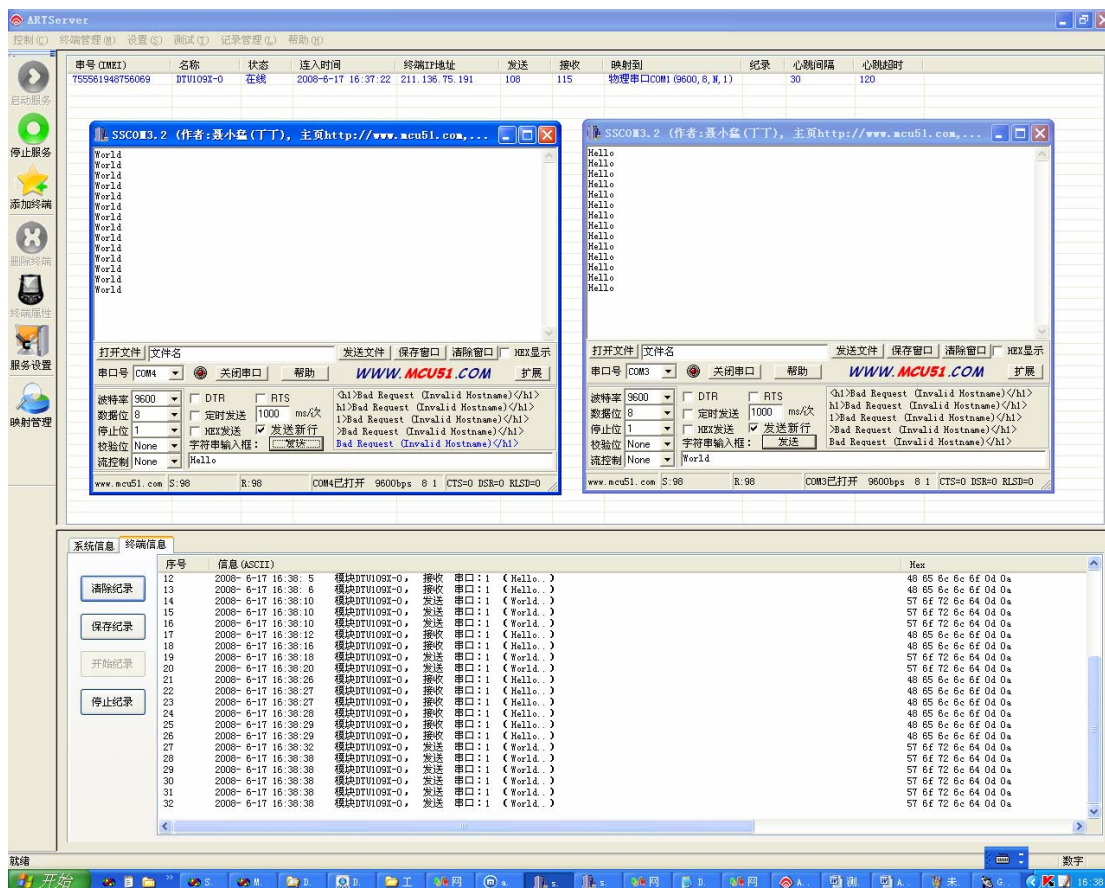


★ Data distribution rules (physical serial port forwarding)

Open the serial port COM3 to connect A-GPRS1090I device, make the physical serial port COM1 to connect with another unoccupied serial port COM2, COM3 can send data to ARTServer, and then data is transmitted from the server to the COM1.

In the server program, the "terminal information" page can detect uplink data from COM3 of A-GPRS1090I; COM1

can connect with other equipment to send downlink data to A-GPRS to realize transmission. Show as follows:



(2) Precede "TCP serial port forwarding" test



Click the left "Mapping management" button, it will pop-up dialog box.

映射管理

映射表

← 映射

删除映射

终端名称：DTU109X-0

映射到：TCP端口

串口号：COM1

串口配置

TCP端口：5000

确定

Map the DTU1090-0 which is new connection device to the TCP serial port, user can change serial number, and default number is 5000.

Click the “mapping ”button, show as follows:

映射管理

映射表

DTU109X-0	↔	TCP端口5000
-----------	---	-----------

← 映射

删除映射

终端名称：所有终端

映射到：TCP端口

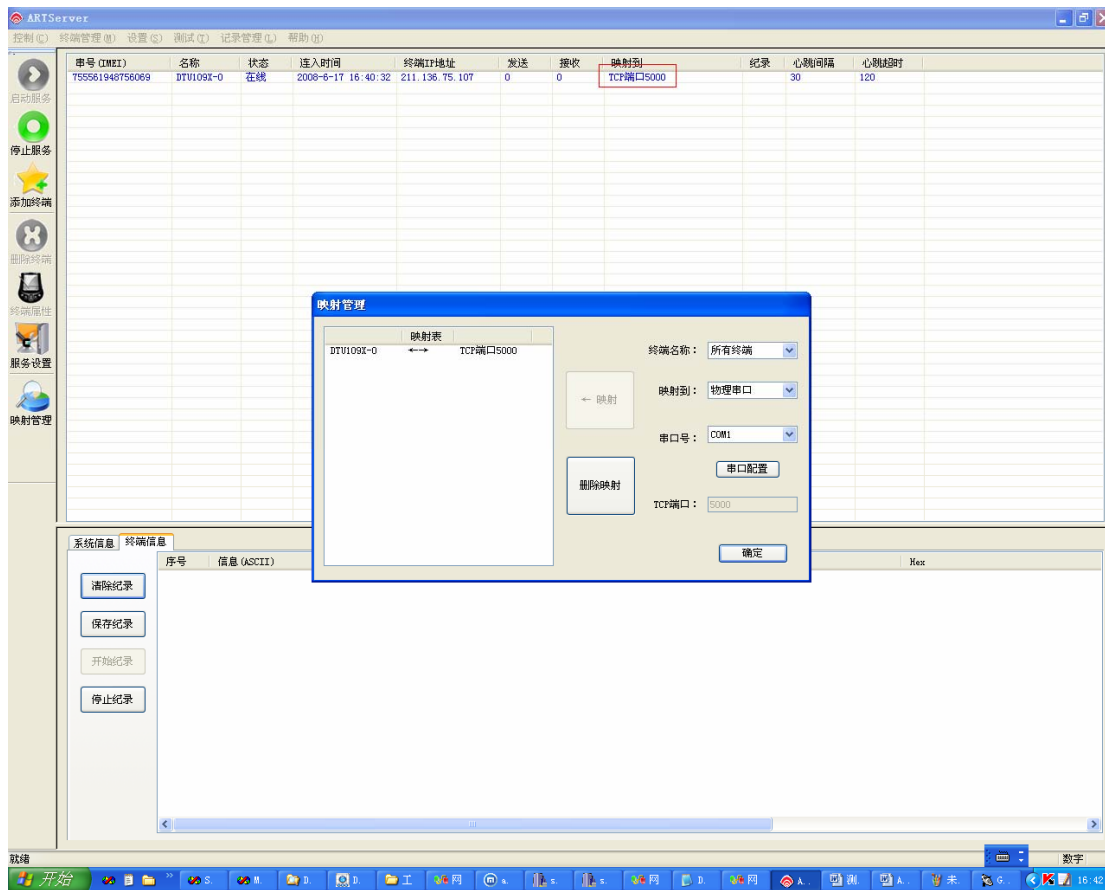
串口号：COM1

串口配置

TCP端口：5000

确定

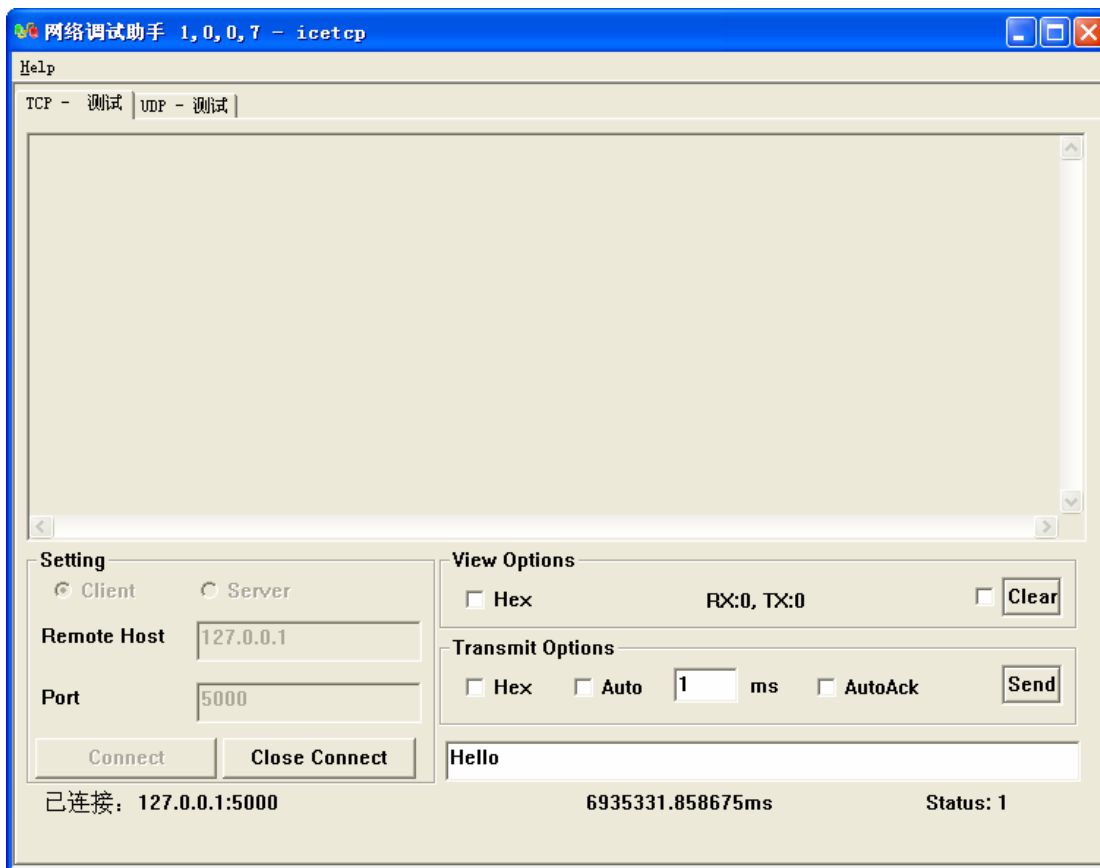
Then master service will add the TCP serial port forwarding function:



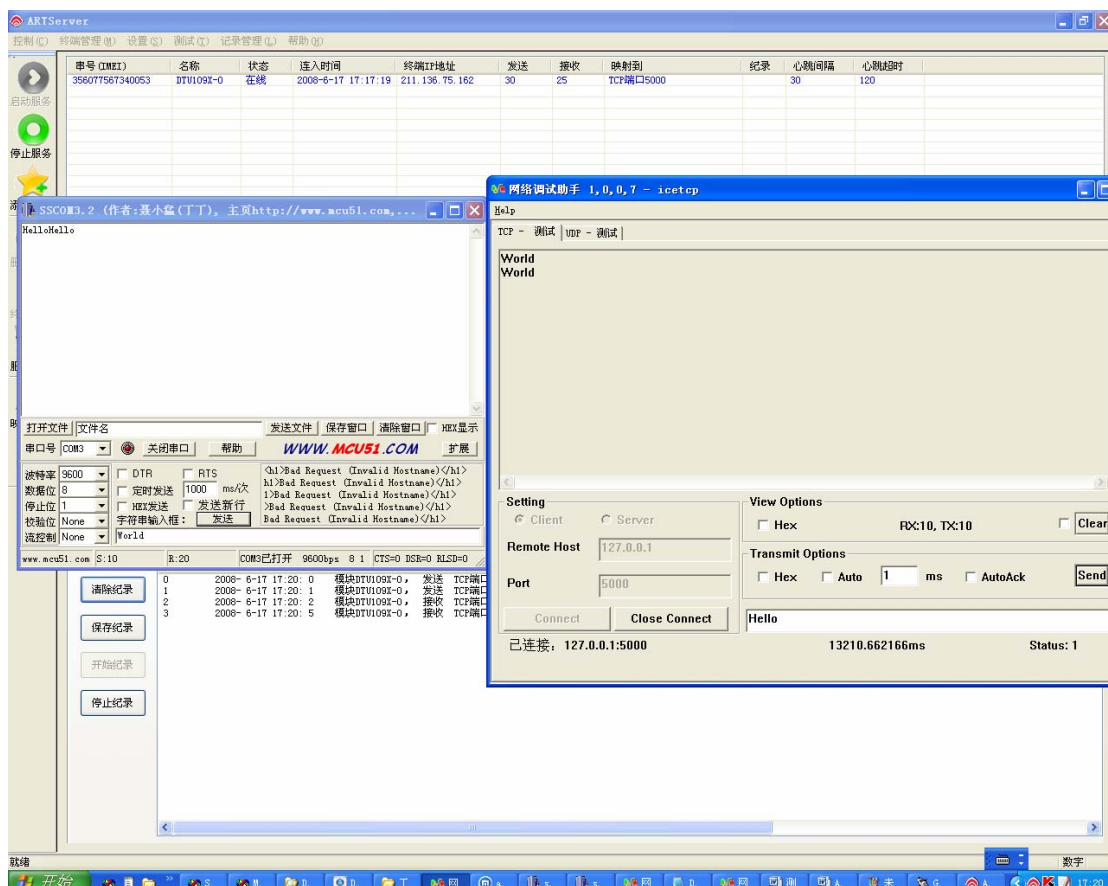
★ Data distribution rules (TCP serial port forwarding)

Open the COM1 to connect with serial port of A-GPRS1090I, then COM1 can send data to the ARTServer, and last ARTServer can transmit data to the serial port 5000 of TCP.

Open "icetcp.exe", we can use it as client to connect with serial port 5000 of TCP, in this way it can realize transmission data. Show as follows:



In the server program, the "terminal information" page can detect uplink data from COM3 of A-GPRS1090I; it can realize transmission by the serial port 5000 of TCP to send downlink data to A-GPRS. Show as follows:



(3) Precede "virtual serial port forwarding" test



Click the left "Mapping management" button, then it will pop-up dialog box.

The 'Mapping management' dialog box shows the following configuration:

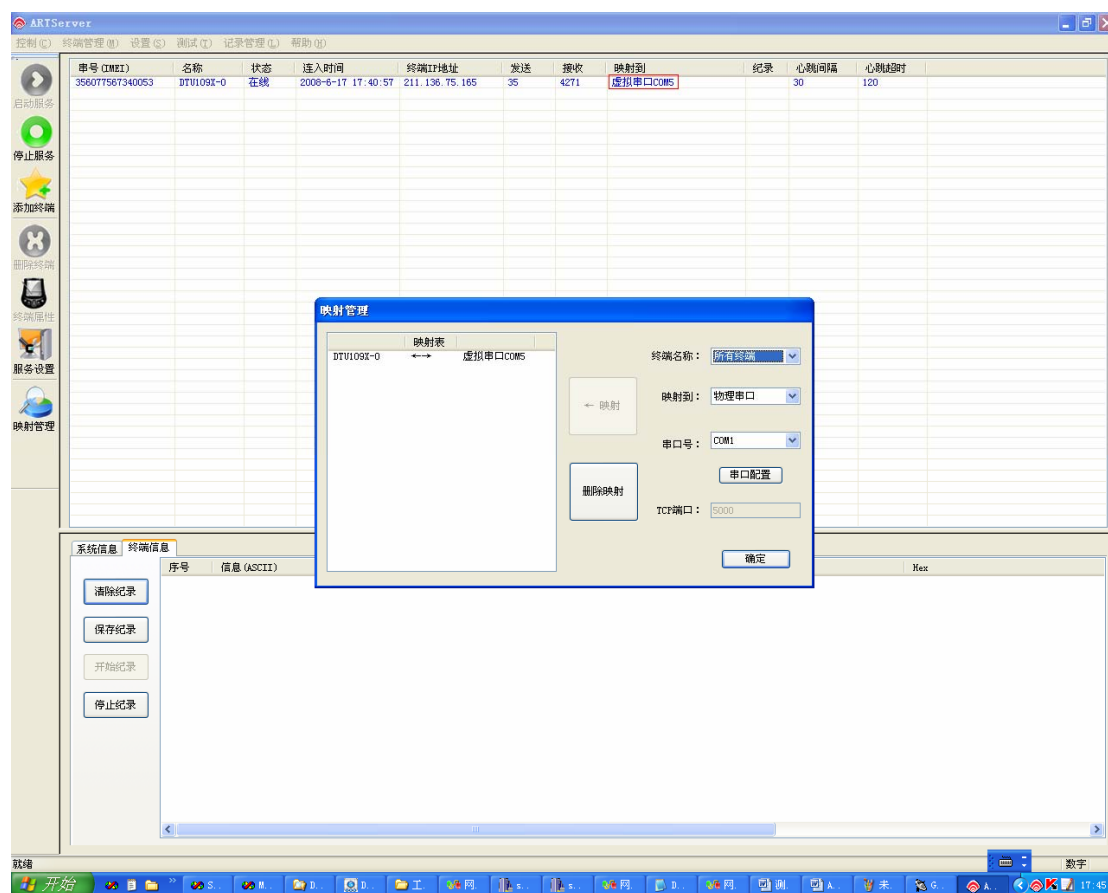
- Terminal name: DTU109X-0
- Map to: 虚拟串口 (Virtual serial port)
- Serial port number: COM5
- TCP port: 5000
- Buttons: ← 映射 (Map), 删除映射 (Delete mapping), 串口配置 (Serial port configuration), 确定 (OK)

Map the DTU1090-0 which is new connection device to the virtual serial port, serial port is COM5. Click the "mapping "button, show as follows:

The 'Mapping management' dialog box now shows the following configuration:

- Mapping table: DTU109X-0 ↔ 虚拟串口COM5
- Terminal name: 所有终端 (All terminals)
- Map to: 虚拟串口 (Virtual serial port)
- Serial port number: COM5
- TCP port: 5000
- Buttons: ← 映射 (Map), 删除映射 (Delete mapping), 串口配置 (Serial port configuration), 确定 (OK)

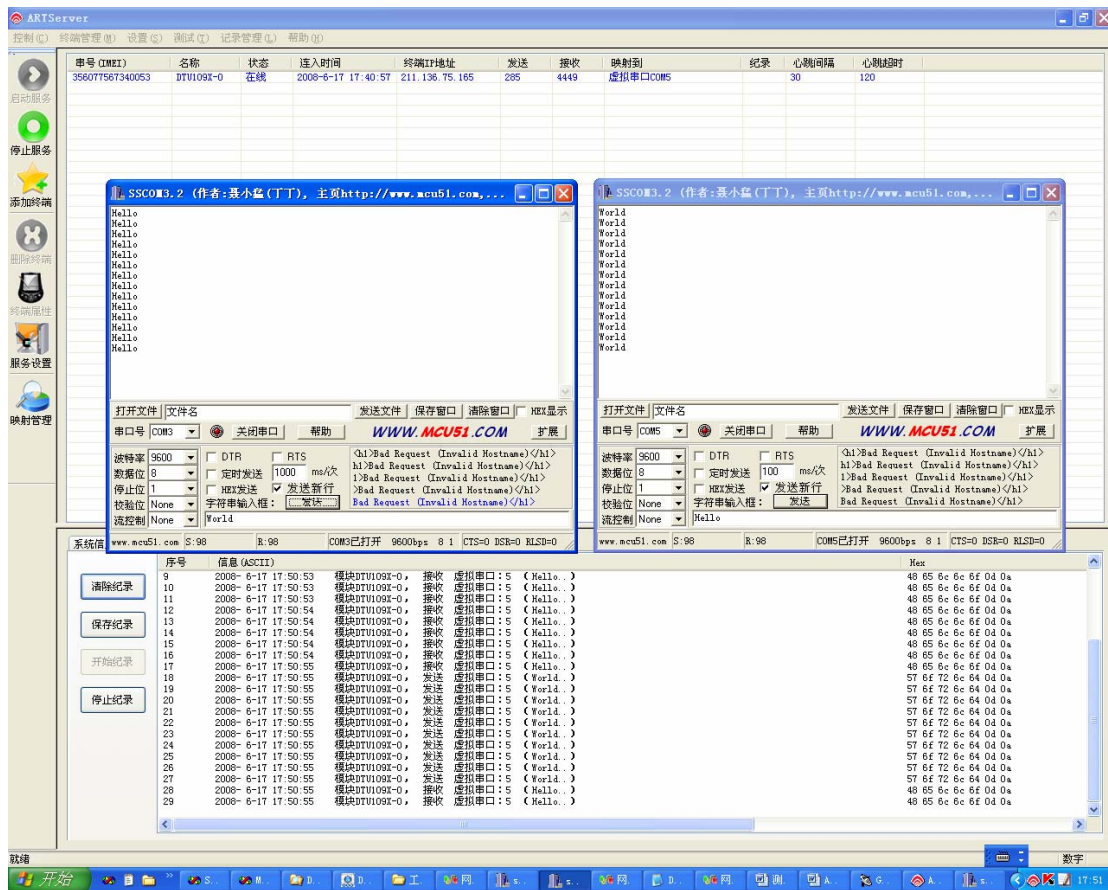
Main server program will add virtual serial port function:



★ Data distribution rules (virtual serial port forwarding)

Open the COM1 to connect with A-GPRS1090I, COM1 can send data to ARTServer, then ARTServer can transmit data from the server to the virtual serial port COM5.

In the server program, the "terminal information" page can detect uplink data from COM1 of A-GPRS1090I; it can realize transmission by COM5 to send downlink data to A-GPRS. Show as follows:



Transparent transmission

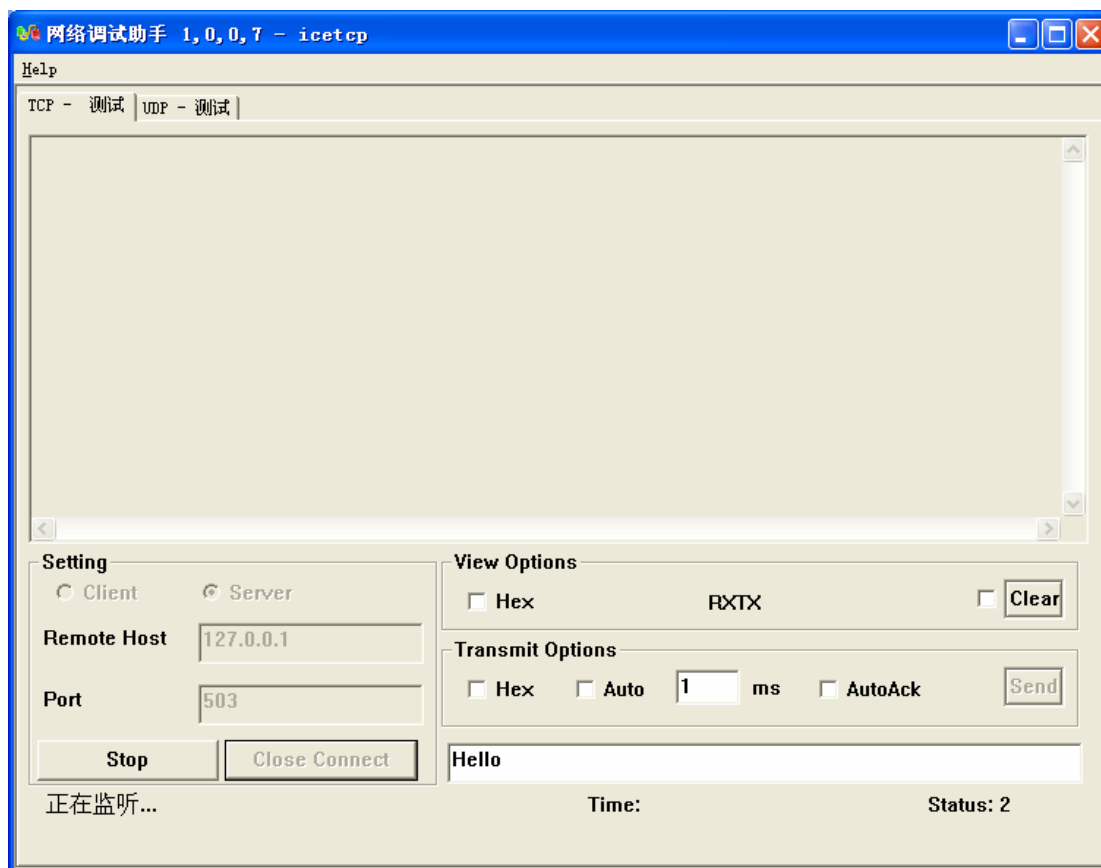
Configuration Settings

- 1 First set the "transferring mode" to the "transparent transmission."
- 2 Others are the same as "agreement transmission".

Description: data packets are issued by transparent transmission do not have the header.

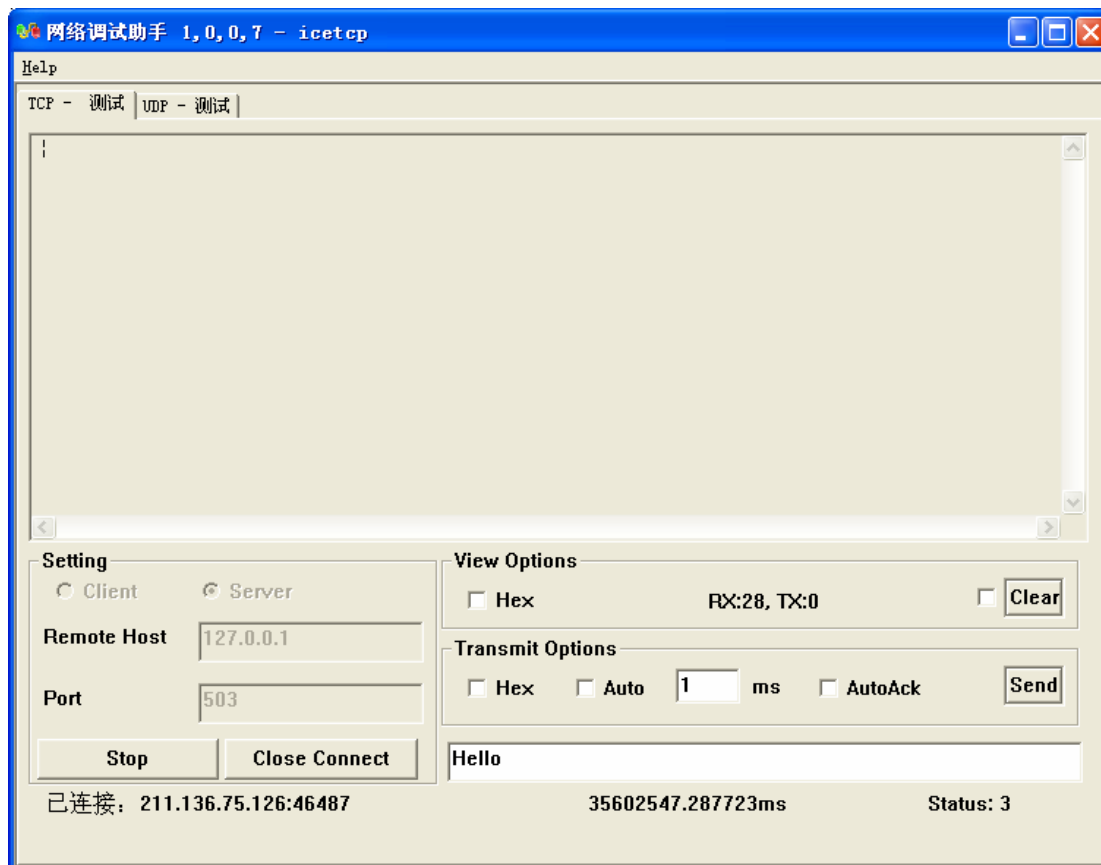
Server configuration

Use "icetcp.exe" to create a server, open a port, the port number is the same as the port number of module configuration.
Show as follows:



Give the power to A-GPRS1090I, waiting until the module connects with the server.

Show as follows:

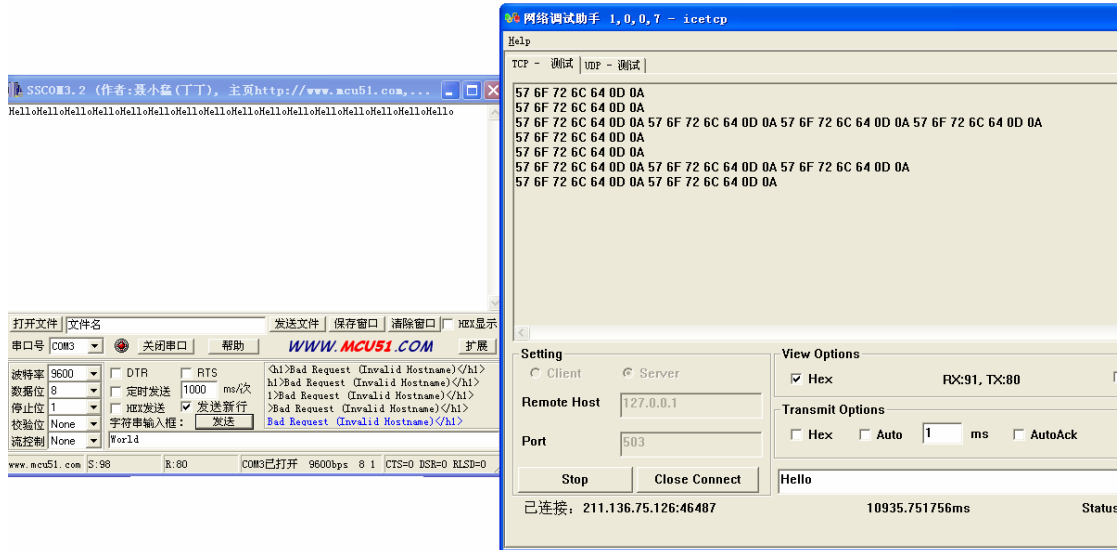




★ Data distribution rule (transparent transmission)

Open COM1 to connect with A-GPRS1090I, COM1 can send uplink data to the server, the server sends the downlink data to the serial port COM1.

Show as follows:



Chapter 6 A-GPRS1090I dial-up configuration guide

This product can dial-up Internet through the serial port

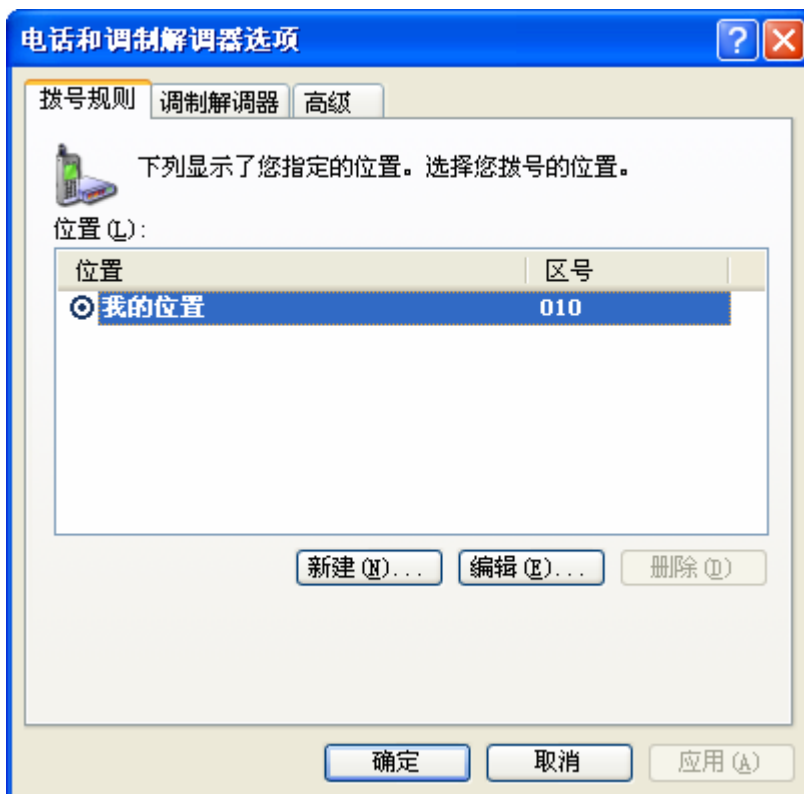
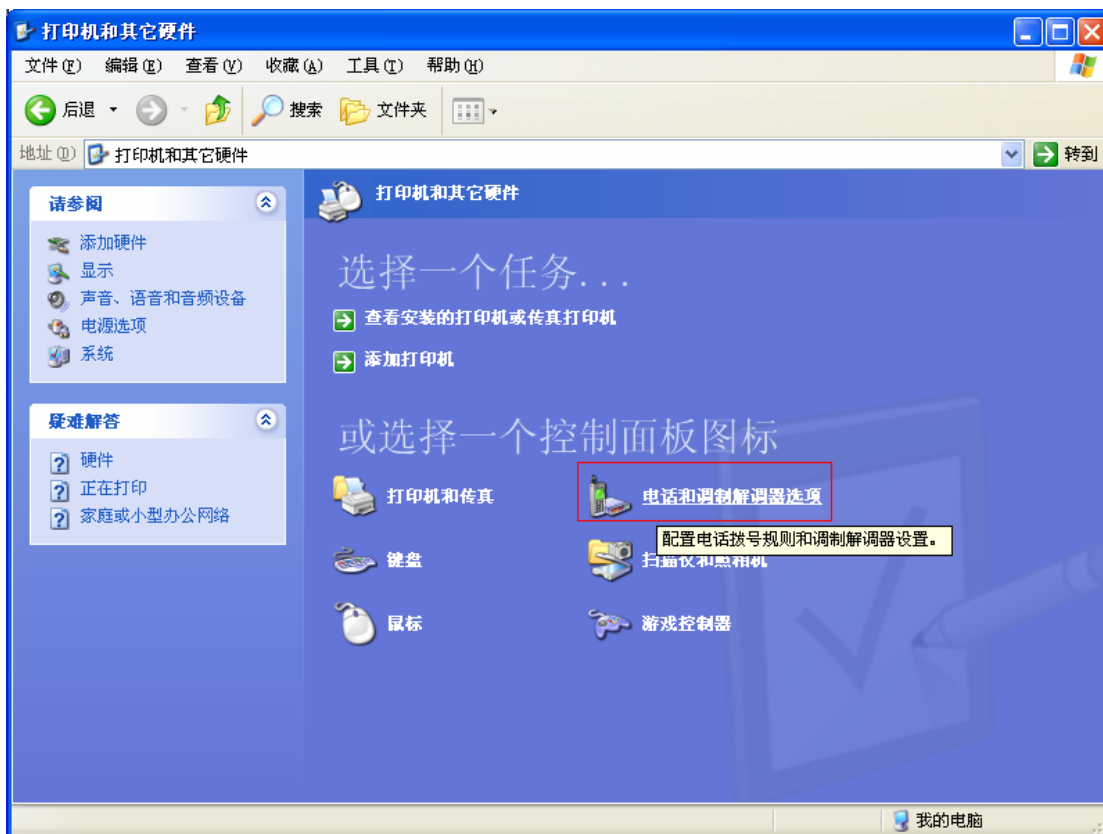
Computer establishes Modem Controller and creates dial-up connection

Establish Modem Controller

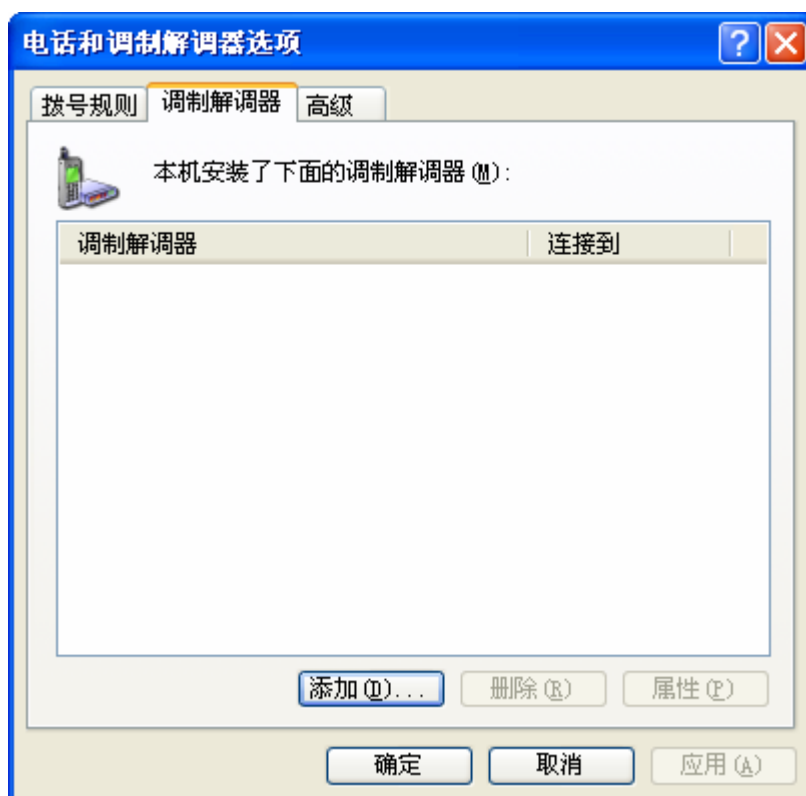
1 Open Windows XP's Control Panel, click "Printer and Other Hardware", show as figure:



2 Click "Phone and Modem Control Options" of the new pop-up dialog box, show as figure:



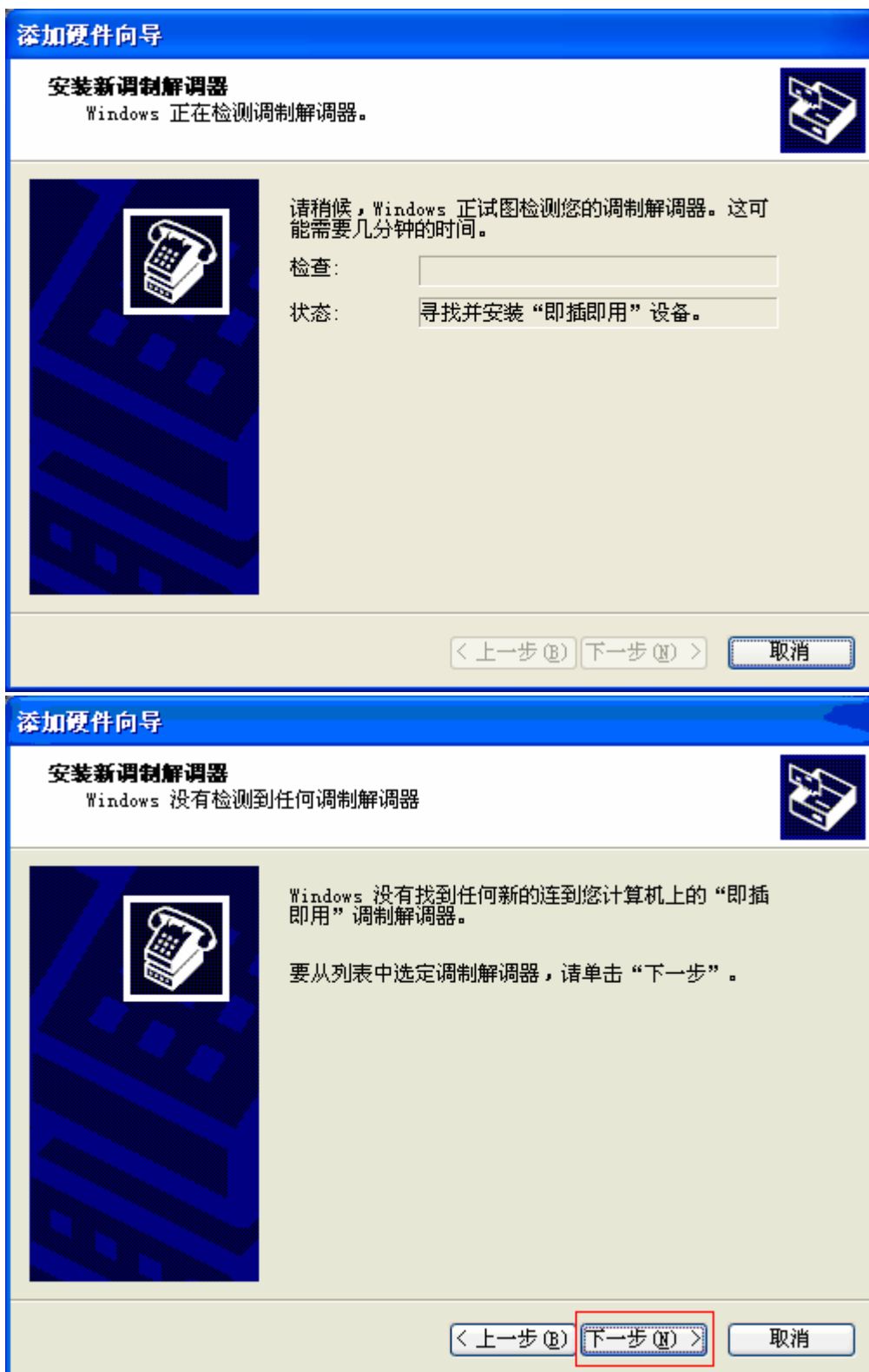
3 Select the attribute page of "Modem Control", show as figure:



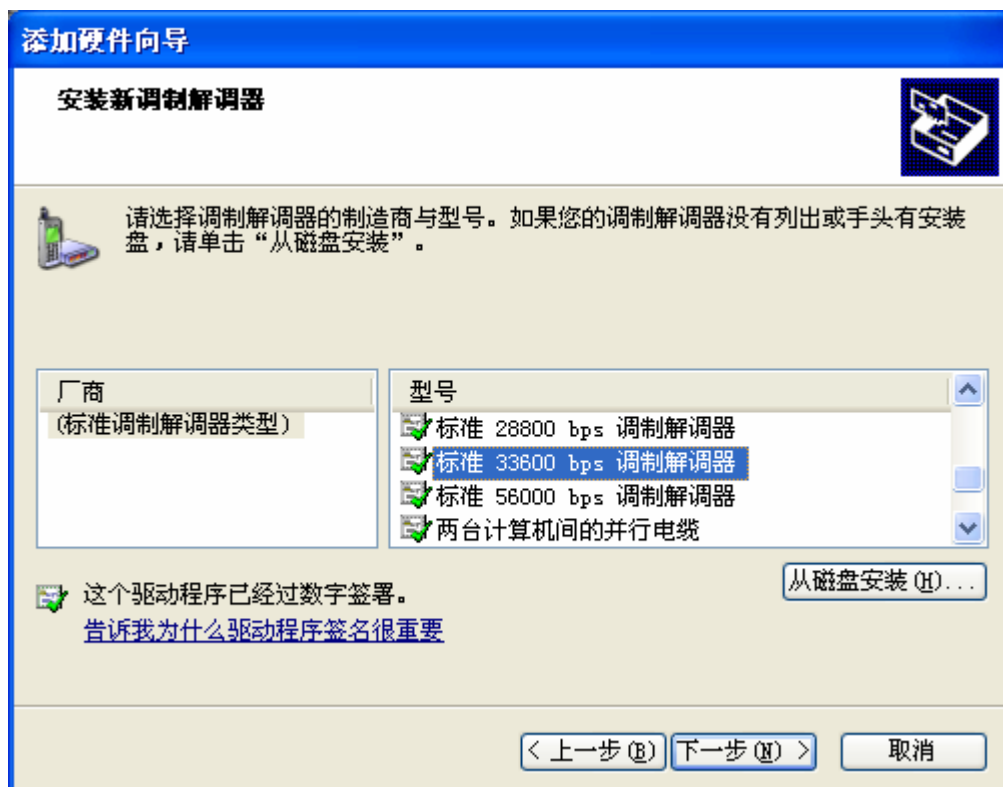
4 Click the "Add" button; and add the serial port as a modem control, show as figure:



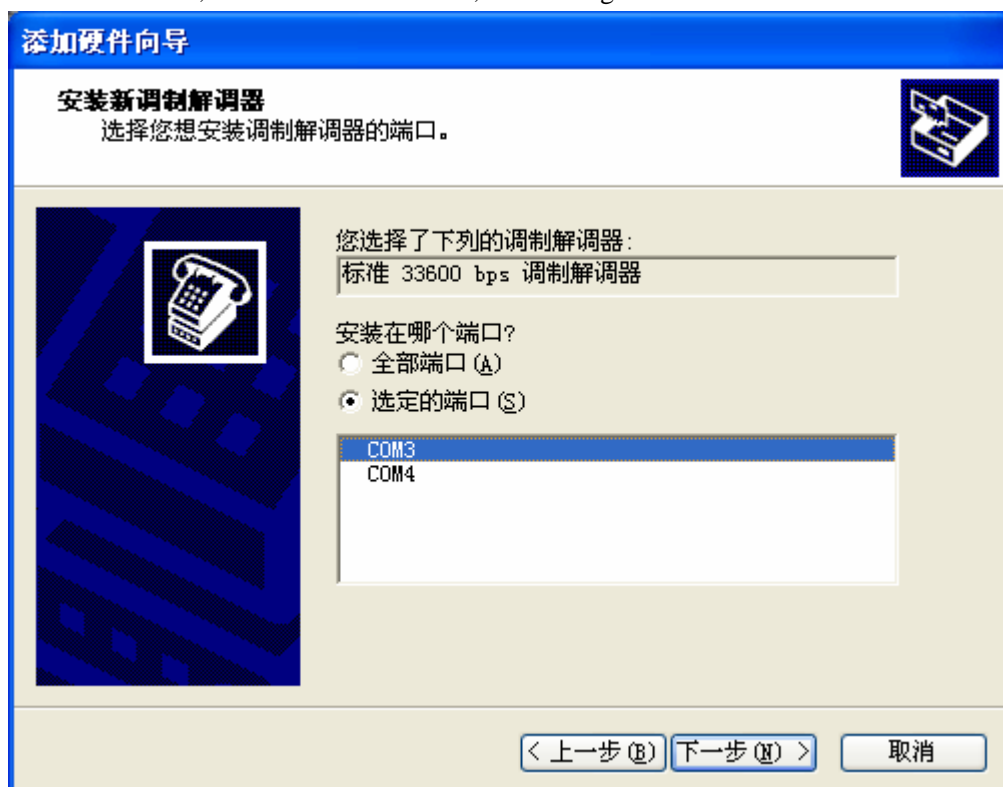
Waiting for system detects the device.



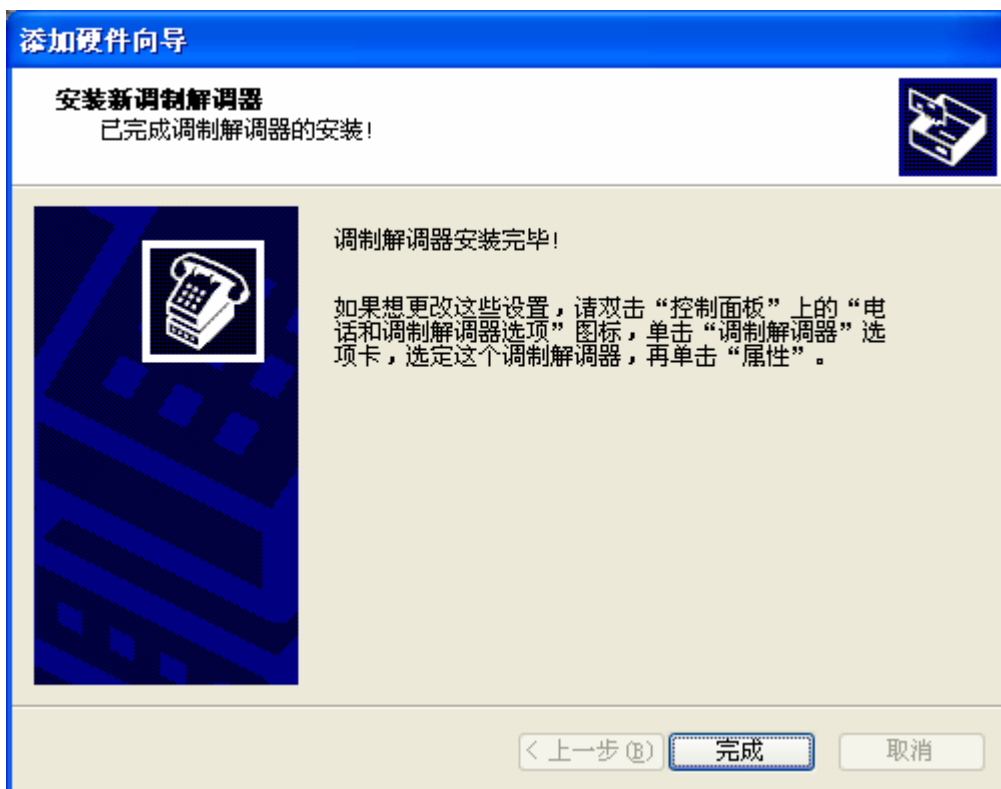
5 Choose 33600bps modem control, Click the "Next" button, show as figure:



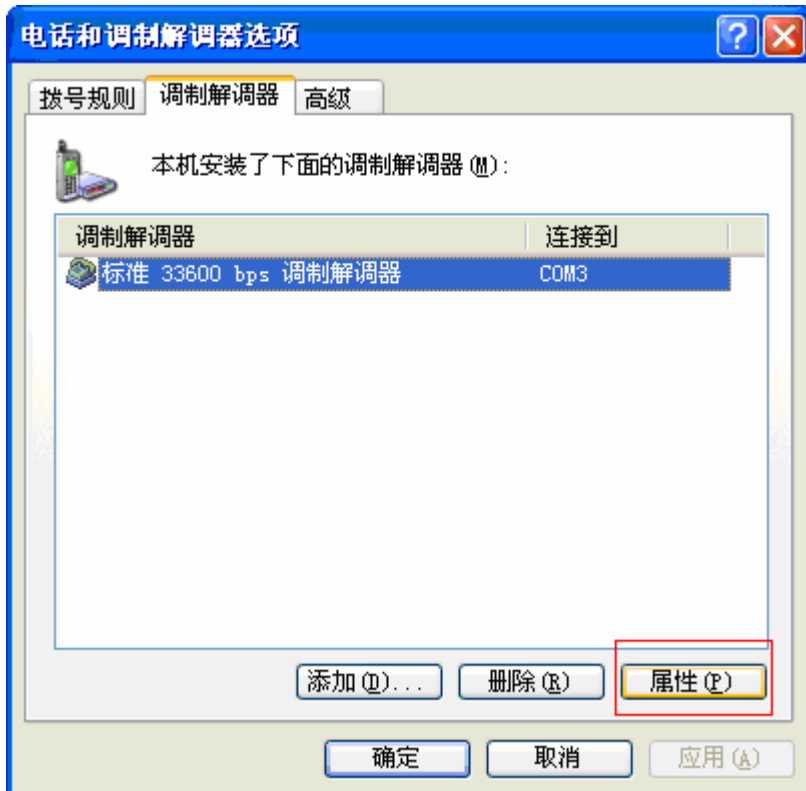
6 Choose COM3, click the "Next" button, show as figure:



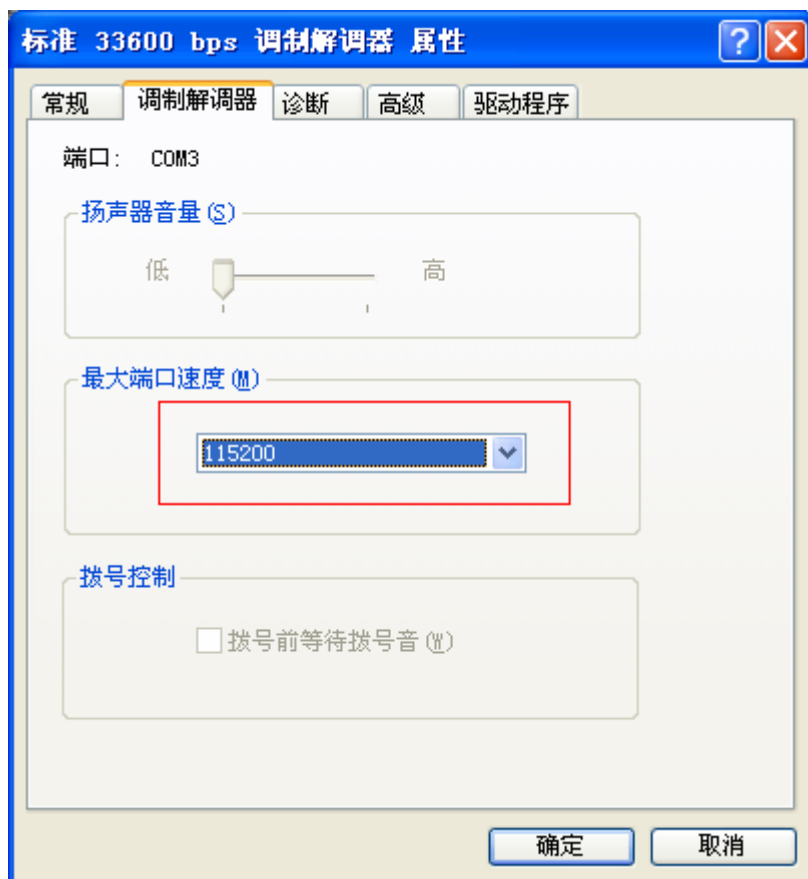
7 When Modem Control has been installed, click the "Finish" button, show as figure:



8 There is a new modem control appears in "Phone and Modem Control Options" dialog box which connects to COM3. Show as figure:



9 Click "Attribute " dialog box, In the "Modem Control" attribute page the "maximum port speed" should be 115200, show as figure:

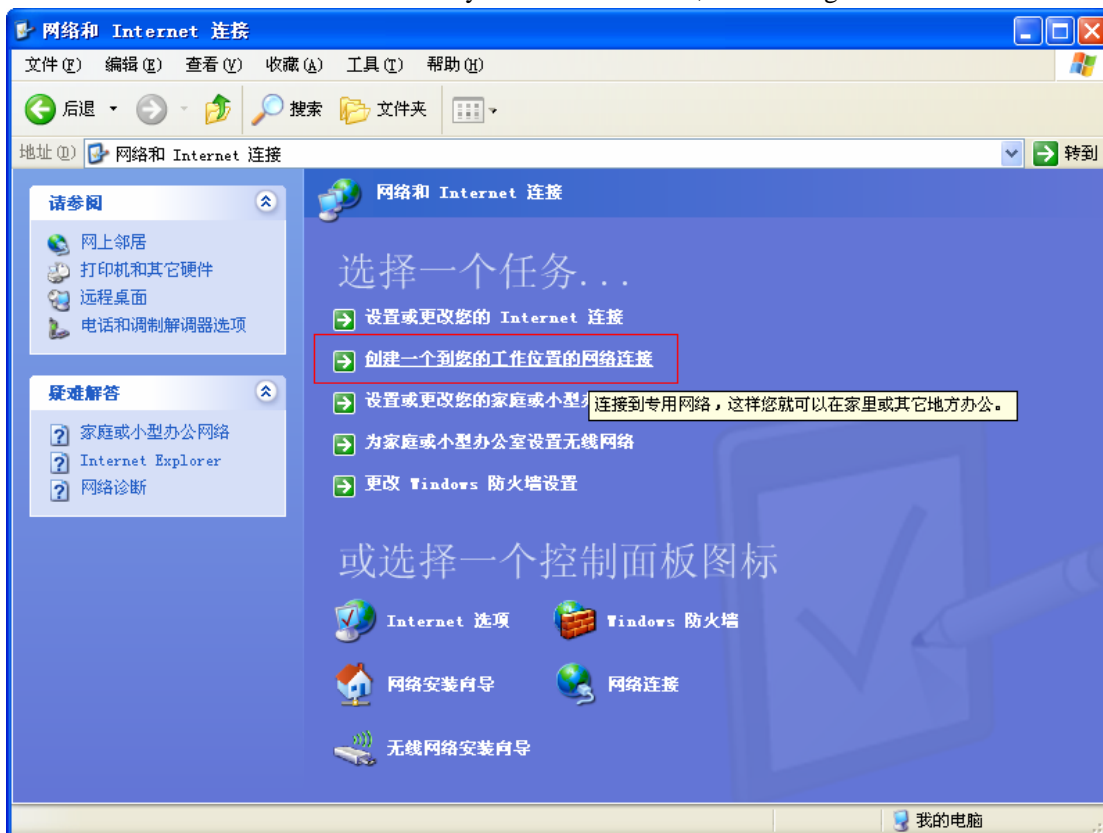


Establish dial-up connection

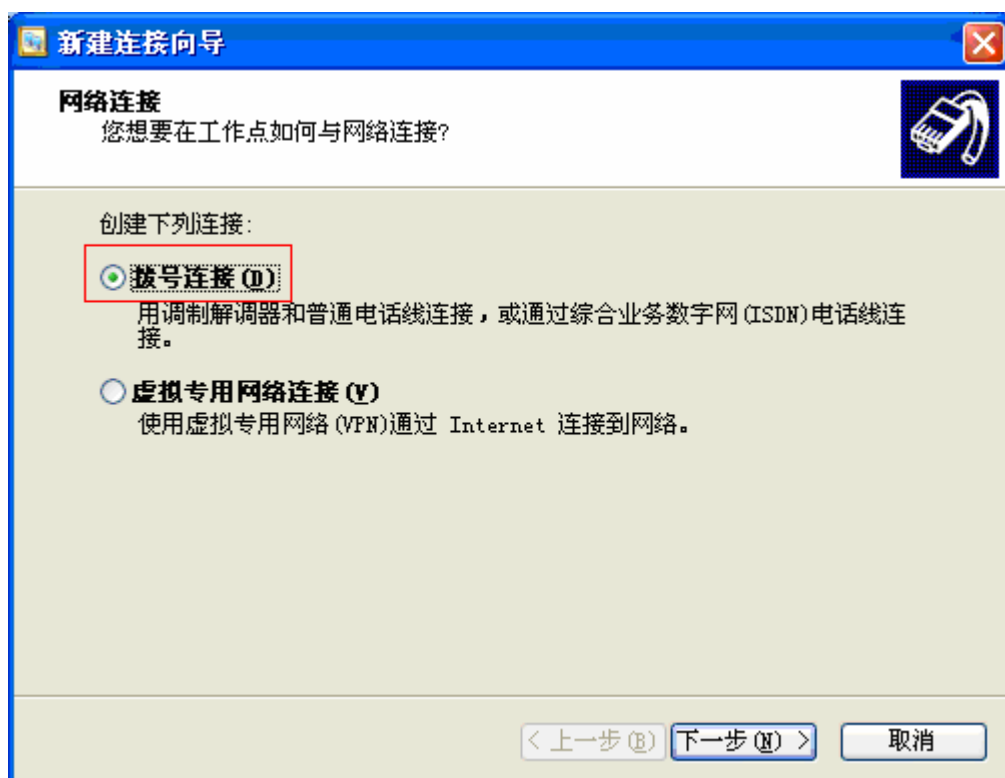
- 1 Open the Control Panel, select "Network and Internet Connection", show as figure:



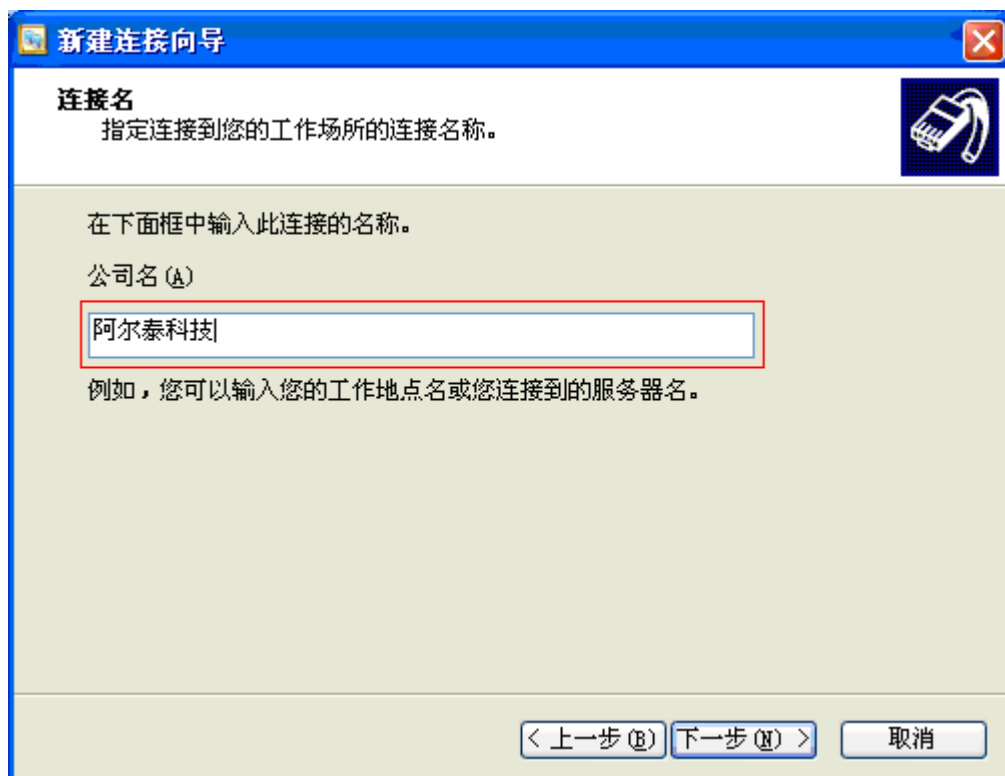
2 Select "Create a network connection to your work location ", show as figure:



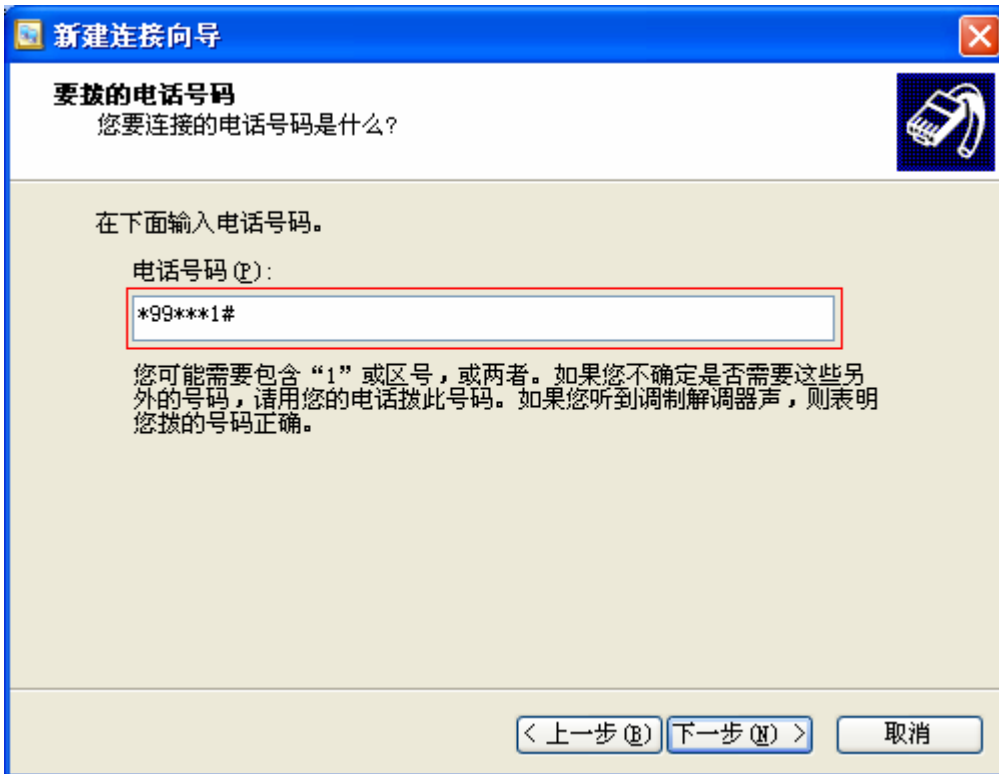
3 Select "dial-up connection", then click "Next" button, show as figure:



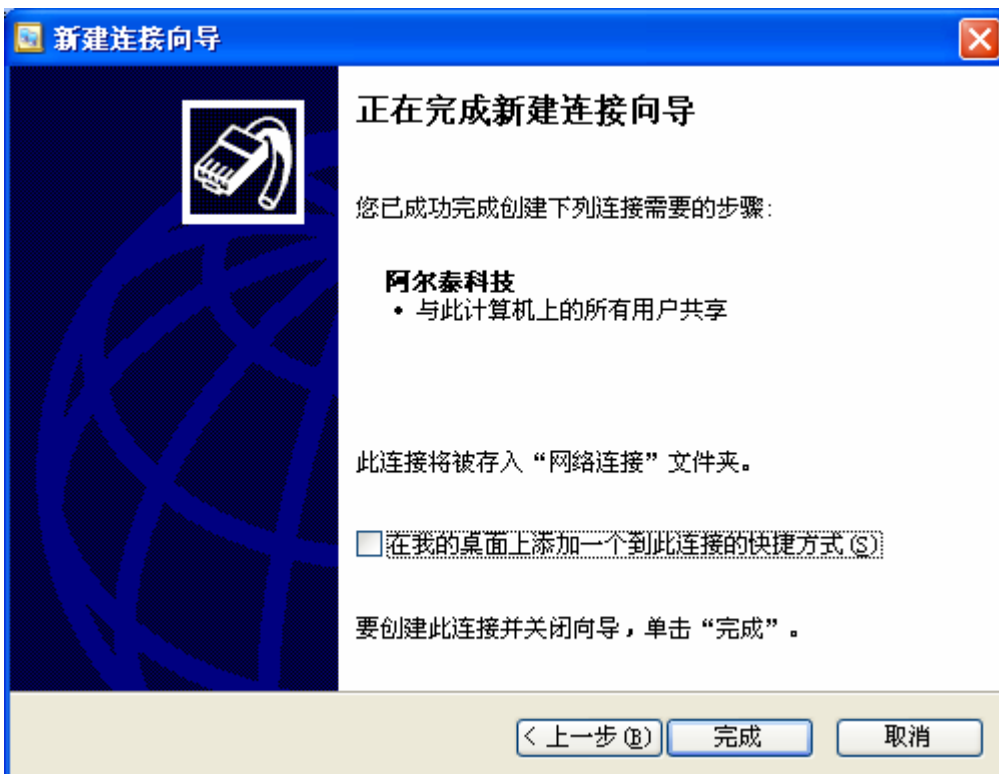
4 Input the company's name, and then click the "Next" button, show as figure:



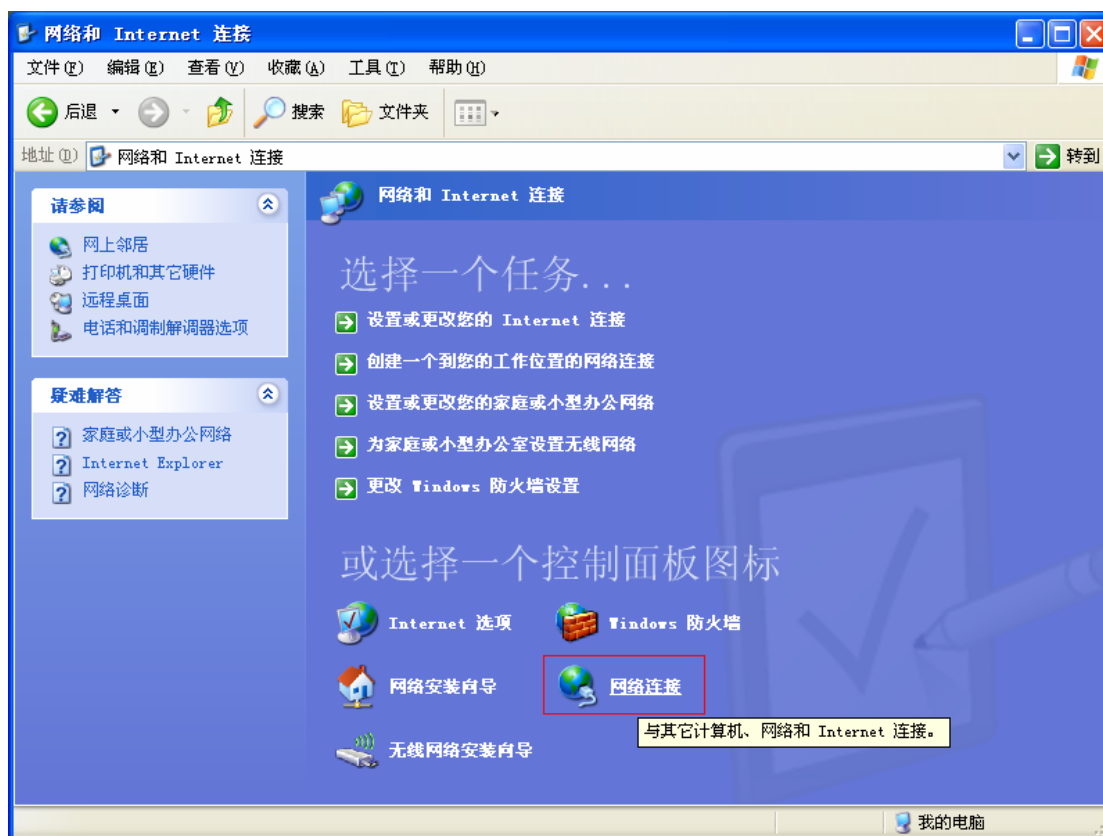
5 The telephone number is: *99***1#, click the "Next" button, show as figure:



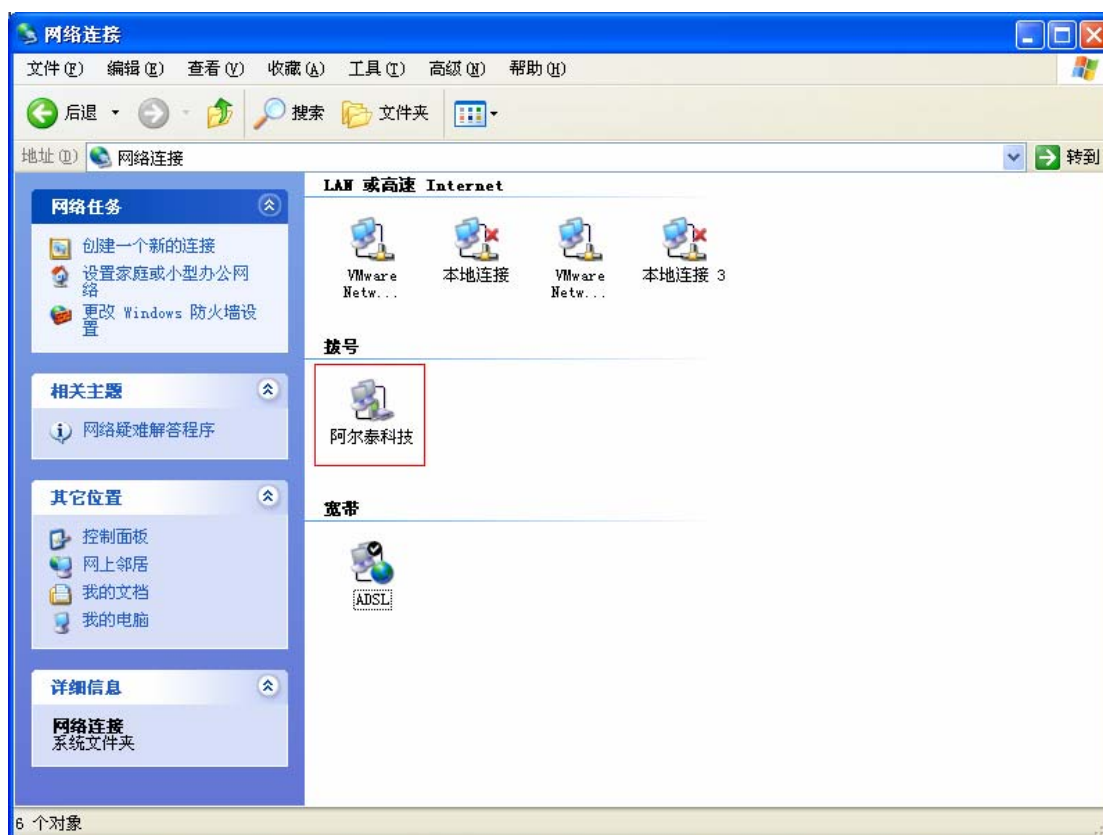
6 When connection is established successfully, click the “Next” button, show as figure:



7 Open “Network Connection”, show as figure:



8 The dial-up connection is being existence.



A-GPRS1090I Connects to the Internet

一、 Open serial port tool, show as figure: COM3, Band=115200.

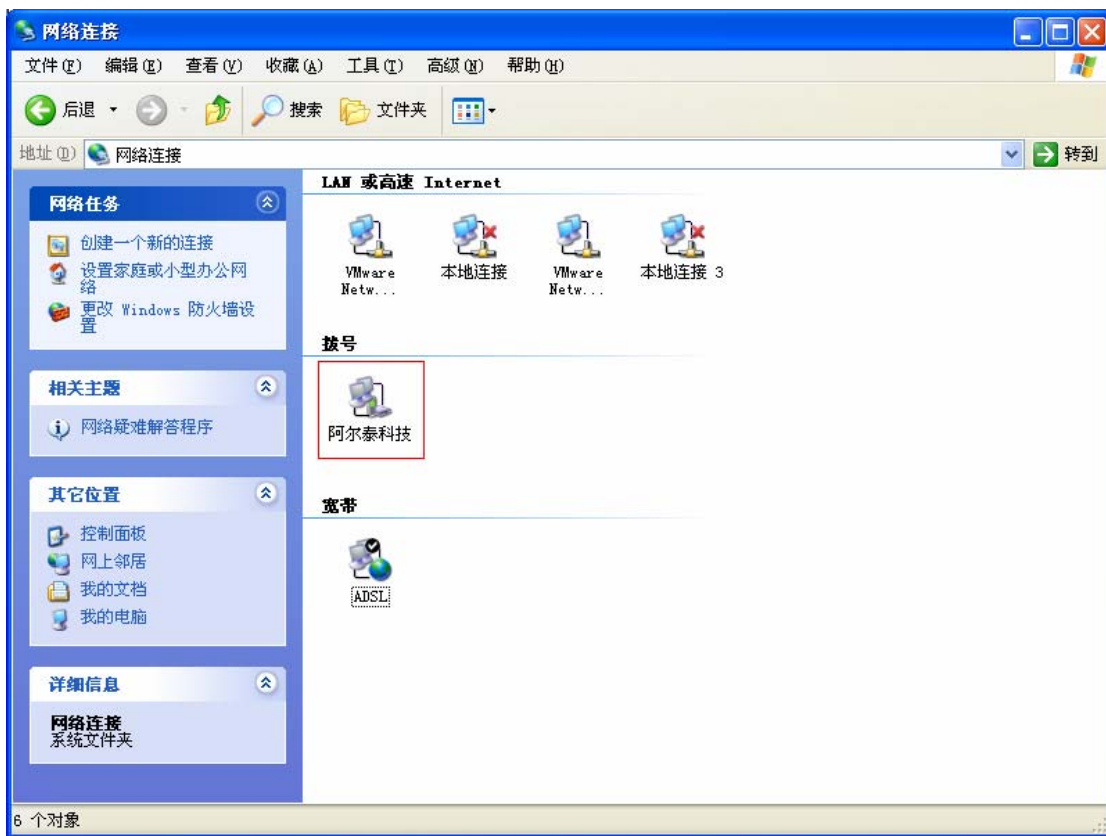
1 Send character "a" in regular time and interval time is one second.



2 Give the power to A-GPRS1090I; waiting for module into the dial-up mode, if connection is successful the serial port will receive "OK", and then cancel sending, close serial port. Show as figure.

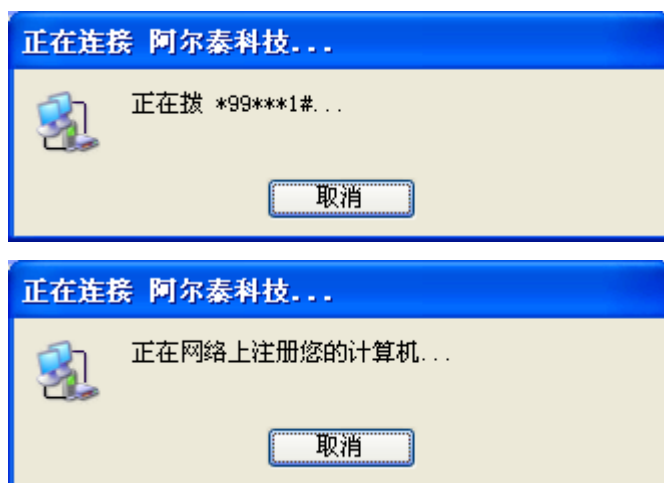


3 Open "Network Connection", show as figure:



4 Dial-up by double-clicking "ART technology", show as figure:





5 Dial-up is success; now can surf in the Internet



Chapter 7 Fault Diagnosis

The following are a series of common faults of GPRS1090I, possible causes and solutions. If the problem persists, users can directly connect with the ART in order to get technical support.

1 The module can not work well, possible reasons are in the following:

- a) The antenna does not contact well;
- b) The SIM card does not contact well;
- c) The SIM card does not have the money;
- d) The network is not connection or the speed is too slowly.
- e) Public Network IP has changed or oray has disconnected.

2 when working a period of time, the module short-terms automatically, the possible reasons are in the following:

- a) The Network is not connecting well;
- b) If using Public Network, it maybe the Public Network has changed;
- c) The SIM card does not have the money;
- d) The module receives too many data in one time.